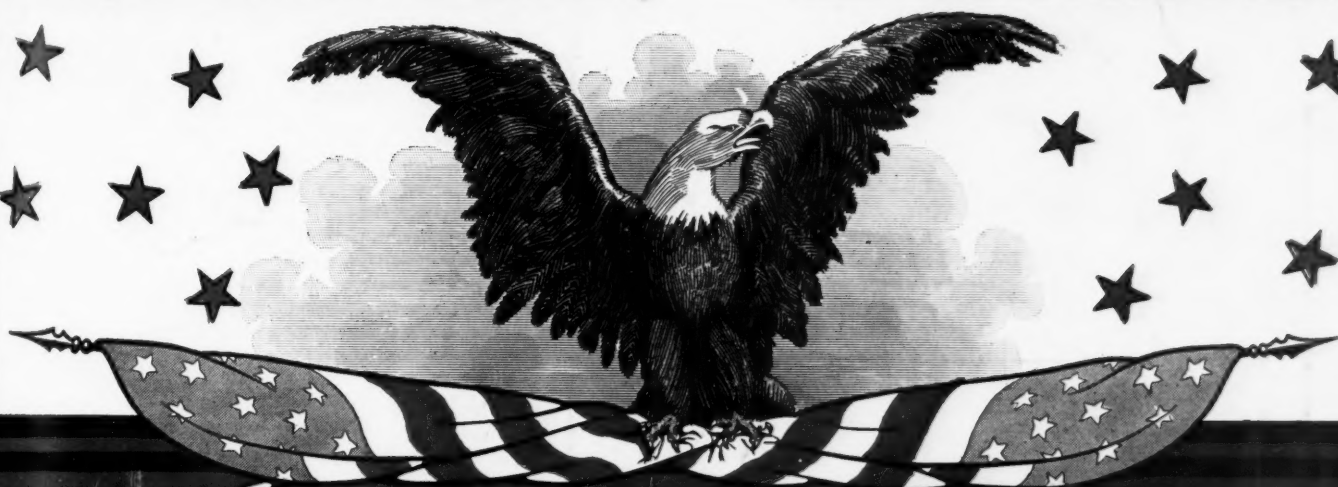


JUNE 1916

Vol. 9 No. 6

AMERICAN CARPENTER AND BUILDER



THE WORLD'S GREATEST BUILDING PAPER

SUMMER COTTAGES

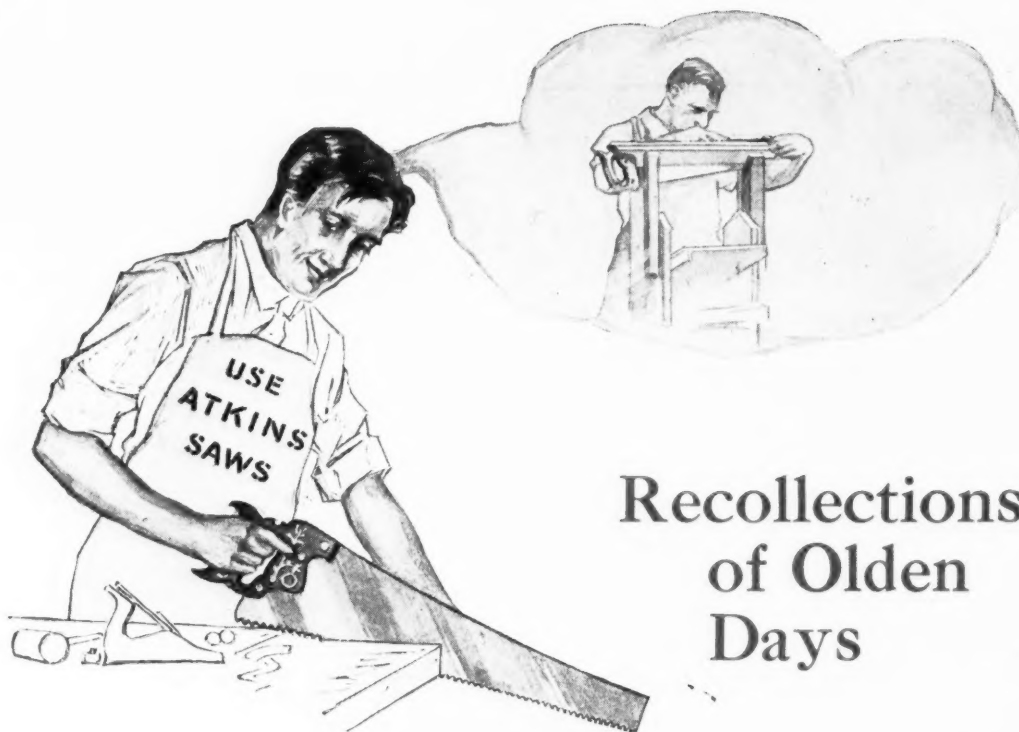
IDEAS, PLANS, DETAILS, CONSTRUCTION

...Also...
in this issue

Auto Trailers
Modern Corncribs
Wallboard Shacks
And 20 Others



Price 20 Cents



Recollections of Olden Days

Of course he smiles when he thinks of the days he wasted in hard, backbreaking, eye straining, unnecessary filing and refitting. He now uses saws which not only cut true to the line and run more easily but that hold their sharp cutting edges longer than any other Saw.

Atkins Saws

For all purposes. Made of SILVER STEEL. Require less fitting because they are more scientifically made. Then there is no risk in buying an ATKINS SAW because they are covered by a Money Back Guarantee should they fail to give perfect satisfaction. MADE WITH EITHER THE OLD STYLE STRAIGHT ACROSS HANDLE OR ATKINS EXCLUSIVE PERFECTION HANDLE, EMBOSSED.

OUR FREE OFFER: Send us ten cents for our 32-page Carpenter's Catalog, called "SAW SENSE." Tells all about the complete line of Saws, Saw Tools and Specialties. Also our Time Book with wage scale and a free gold plated Hand Saw Watch Charm.

E. C. ATKINS & COMPANY, Inc.
Indianapolis, Ind.



A Line of Business Worth Encouraging

WE were talking with a granary elevator man not long ago, and remarked that if the proposition of the high corn crib equipped with power elevator was to make the progress it should, considerable educational work would have to be done among the country carpenters and builders.

"You have an outfit here, for instance," we said, "that works best and most economically when installed in a crib of certain standard dimensions. The cupola should be built in just a certain place, and should be just large enough to accommodate the distributing head of the elevator. What happens if Mr. Carpenter doesn't know about your outfit and what it requires, until he has the crib practically finished?"

"That's our biggest problem," he replied. "You have struck it. Almost every week we have to send out a special man to rebuild a cupola before our cup elevator can be installed or before it will work as it should. I don't mean, you understand, that the corn crib or granary is not substantially built—simply that it doesn't fit our equipment. The country builders have been so accustomed to building the old style, low corn crib—the hand-shoveling type, that they don't realize the importance of working out ahead of time all the building requirements for the cup elevator. We have corn crib and granary plans that give all of the important dimensions and details of construction, and we wish that every rural carpenter or builder would write us

for a set of these so that he could study them out and get these buildings just right from the start."

"What is the outlook for building business along this line," we inquired.

"Extremely bright. The farmers all thru the corn belt are getting interested. A good many have already put up the high cribs, and a good many more will get to it this summer. You know farm labor is too scarce, and too expensive to depend on hand-shoveling at the busiest time in the fall. With the high crib and power elevator to put in the corn, the farmer's troubles are over in this respect. He handles his grain two or three cents a bushel cheaper and much more quickly.

"If the country builders only realized it, there is a good chance for them for corn crib building business. There are hundreds of farmers who can easily be persuaded to put up a new high corn crib equipped with power elevator who never would think of repairing their old cribs, or building more like them. Your publication has a lot of influence. Why don't you suggest to your enterprising barn builders to get busy on modern corn cribs and granaries?"

Along this line we are pleased to call attention to the model high corn crib and granary design presented in this issue. This is the time of the year to go after this line of business. It can be made a big thing by those who will take an interest in it.

Very sincerely yours,

EDITOR AMERICAN CARPENTER AND BUILDER.

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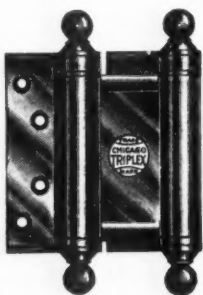
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SPRING HINGES A SUGGESTION

Do you specify a spring hinge with distinctive features which will appeal to your client and assure satisfaction to all concerned?



Chicago "Triplex" Spring Butts

offer this advantage to you. The appearance, durability and finish of this article are unsurpassed, and in consideration of prices that are conservative in respect to value, the up-to-date builder cannot afford to risk his reputation for goods that are unsatisfactory.

Send for Catalogue C 32. It illustrates and describes the most complete line of Spring Hinges manufactured.

Chicago Spring Butt Company.

CHICAGO

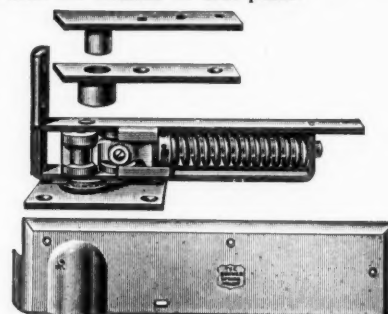


NEW YORK

BOMMER

Floor Surface Spring Hinge For Double-Acting and Single-Acting Doors Release and Holdback Ball Bearing Alignment Device

Every moving part of this hinge can be oiled from a single hole on outside of side-plate.



The most durable hinge of its type; holds the door open when swung to 90 degrees at either side. The spring-action can also be entirely released as long as desired so that the door will swing free, without spring-action, in either direction, by inserting a wire nail (when the door is open) into a hole provided in the side plates for that purpose. The spring-action can be restored by withdrawing the nail.

Your Hardware Merchant Can Supply Them

Bommer Bros., Manufacturers Brooklyn, N.Y.



STOP

Right here, Mr. Reader. Something has drawn your attention to this ad. Do you know what it is? Wait a minute and we will tell you. Read the above picture carefully. It tells the story. It shows just what contractors all over the country are doing every day. Surface your floors the

"American Universal" Way

Saves Time—Saves Money—Saves Worry—Does Better Work—Operated by Electric Motor

Let us tell you more about this wonderful machine and of our special Five Day Trial proposition. Mail coupon today to

American Floor Surfacing Machine Co., 515 S. St. Clair St. TOLEDO, OHIO

American Floor Surfacing Machine Co., Toledo, Ohio:

Without obligation on my part whatever, send me circular and full particulars regarding the "American Universal" Floor Surfer.

Name,

Street,

City, State,



A Bungalow for Permanent Occupancy. Charles E. Anderson, designer, White Plains, N. Y. "The roof is covered with shingles dipped 10" in Cabot's Creosote Shingle Stains; the body is stained a rich brown with Cabot's Creosote Stain."

You Can Pick Out

the houses that have been stained with

Cabot's Creosote Shingle Stains

The colors are so soft and rich and lasting that all other stains look cheap and tawdry in comparison. They go farther, last longer, preserve the wood better and are vastly more artistic—and every gallon is guaranteed. Imitation stains smell of kerosene or benzine and are dangerously inflammable. Cabot's Stains are the genuine Creosote, wood-preserving stains, and they make the wood less inflammable.

CABOT'S QUILT

A scientific heat insulator and sound-deadener that makes houses warmer in winter and cooler in summer and deadens sound in floors and partitions. Not a mere felt or paper, but non-conducting mat that is about thirty times warmer than common papers.

You can get Cabot's Stains and Quilt all over the country. Send for samples and names of nearest agents.

SAMUEL CABOT, Inc., Mfg. Chemists

BOSTON, MASS.

1133 Broadway, N. Y.

24 W. Kinzie St., Chicago

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**The
World's Greatest
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Building Paper**

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In all cases in writing to advertisers inquirers should say: "I saw your advertisement in the American Carpenter and Builder."

VOL. XXI

JUNE, 1916.

No. 3

Water in the Cellar

PREVENTION is better than cure.

If you are building a new cellar it is not generally a difficult matter to build it so that you will not be troubled with water in it. You can make a concrete wall and use some kind of waterproofing material either as a paint for the surface of the wall or mix it with the cement. Or you can build a good stone wall, using cement mortar and plastering the wall both inside and outside.

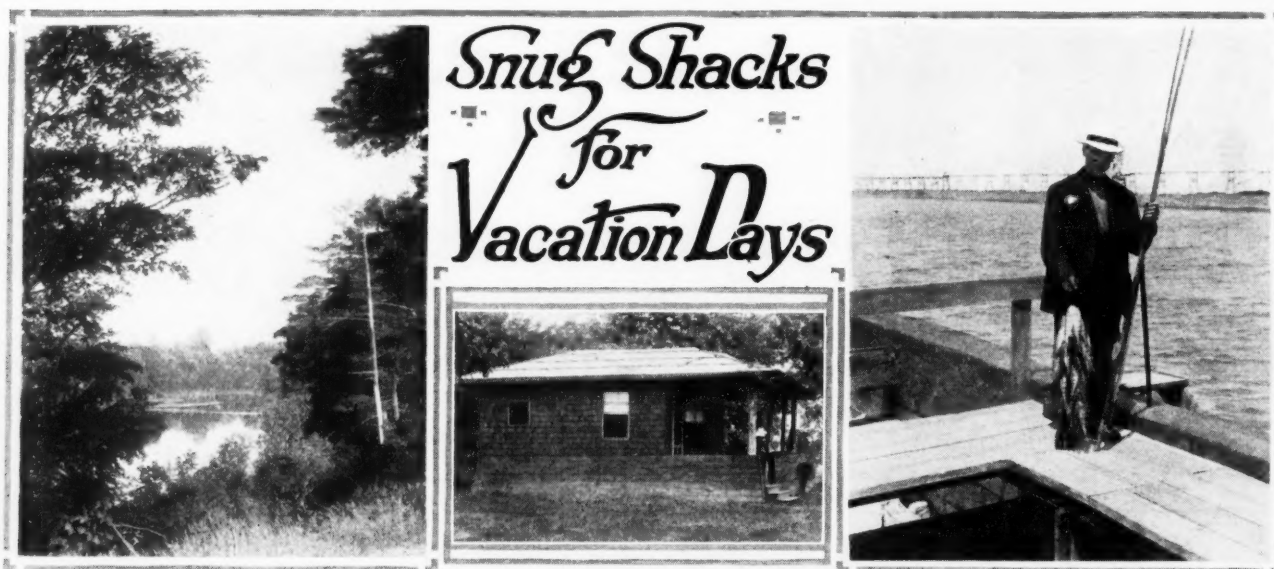
In case you care to paint or plaster the outside of the wall you will need to excavate at least 2 feet larger all around than the wall is to occupy. It is always well to dig out from 8 to 12 inches outside the wall and then after the wall is built fill this space with clay well rammed and puddled with water. Of course you will want a cement floor in the cellar. This can be made waterproof by using some of the preparations sold for this purpose.

In case you have a cellar already built and are troubled with water, there are several courses which may be taken. You can dig out the dirt all around the wall for a distance of 2 feet and down to a foot below the bottom of the cellar, at the outside of the excavation and slanting toward the wall. In the bottom of this trench place tile such as is used for draining land or make a drain of stones. This drain should have an outlet toward which it should have slight fall.

The outside of the wall can be pointed and plastered over with good cement mortar to the top of the ground or all the way to the sills. If you desire you can set up some stakes or 2 by 4's, some 5 or 6 inches from the wall. Put board or plank on the sides next the wall and fill the 4-inch space with concrete. This can go part or all the way up and the top should be slanted down at the outside.

The trench around the wall may be partly filled with

(Continued to page 75.)



THERE are two absolutely necessary parts to the successful summer cottage. It can lack most everything else, but it must have a roof that doesn't leak, and plenty of well-screened windows.

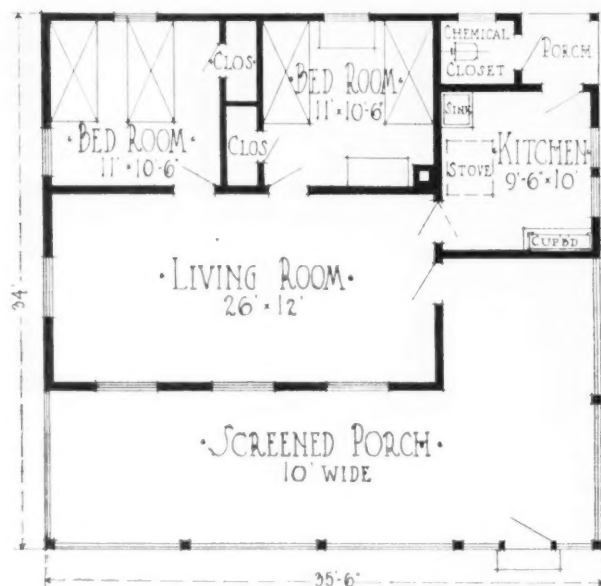
By summer cottages we do not mean the fifty-thousand-dollar palaces at the fashionable resorts, but rather the homely little one-room to five or six-room shacks that cost only a few dollars, yet mean so much summer joy and health to thousands of the everyday sort of folks—the families that love to fish and loaf, and get away from the city to lake, mountain, shore, or stream.

The summer cottage or shack, as already mentioned, should be dry and airy. A good water-tight roof it must have, and the popular cottage these days has a generous supply of windows and then a great big screened porch all along one side. Sometimes there is a screened porch also at the rear.

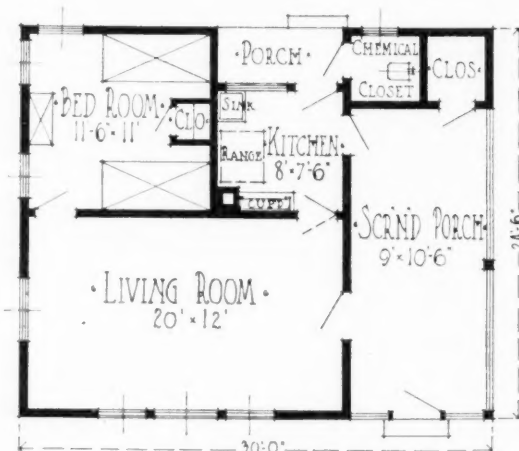
We have designed the accompanying four cottages



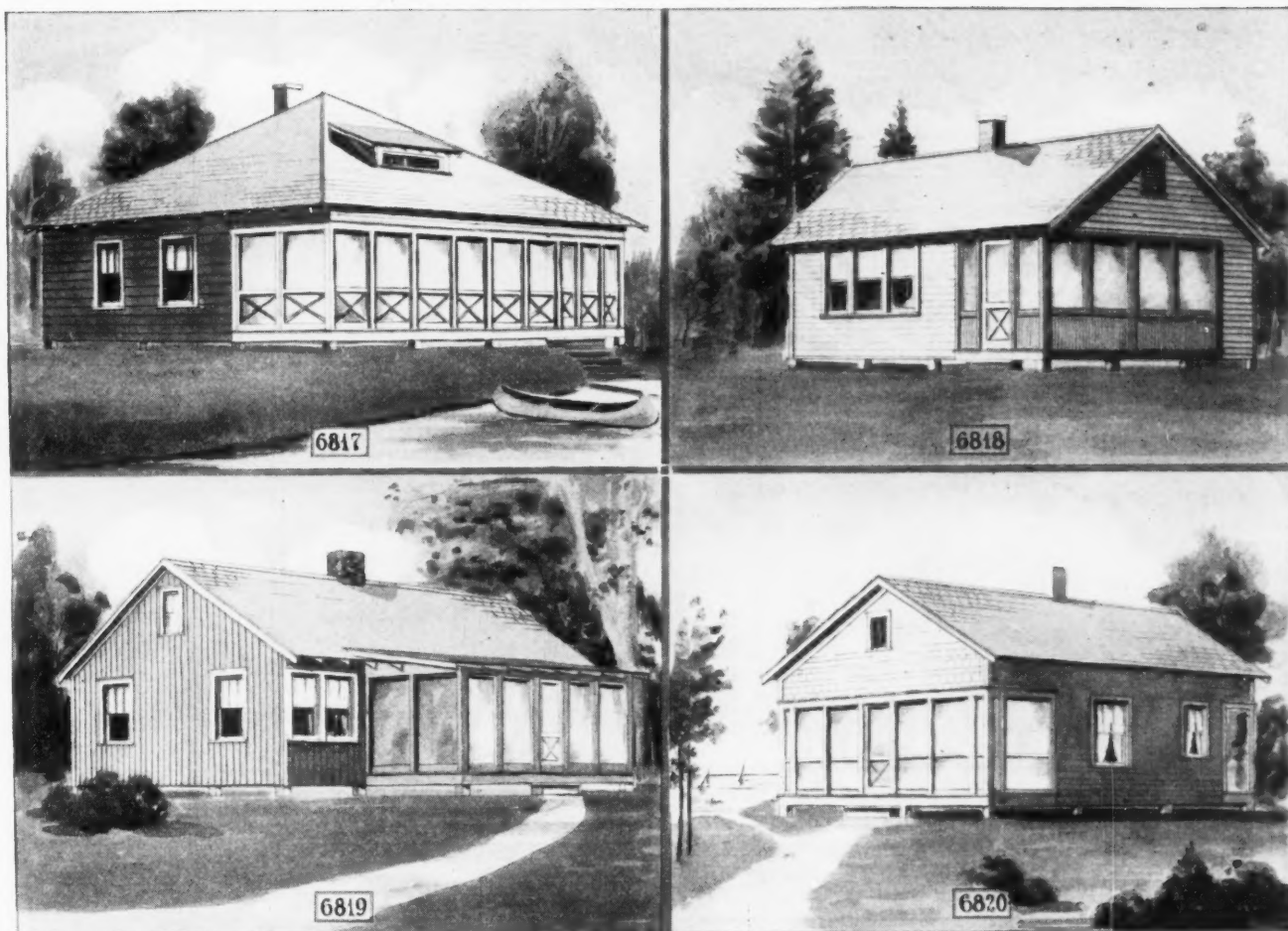
The Side Walls of this Camp at Archer's Pond, Mass., are Lined with Wall Board, Making a Clean, Artistic, Low-Cost Finish.



Arrangement of Four-Room Cottage No. 6817, Illustrated on Opposite Page. A Design for Comfort, with Big Living Room and Cool Screened Porch.



Arrangement of Three-Room Cottage No. 6818, Illustrated on Opposite Page. Plenty of Comfort and Fresh Air in this Cottage.

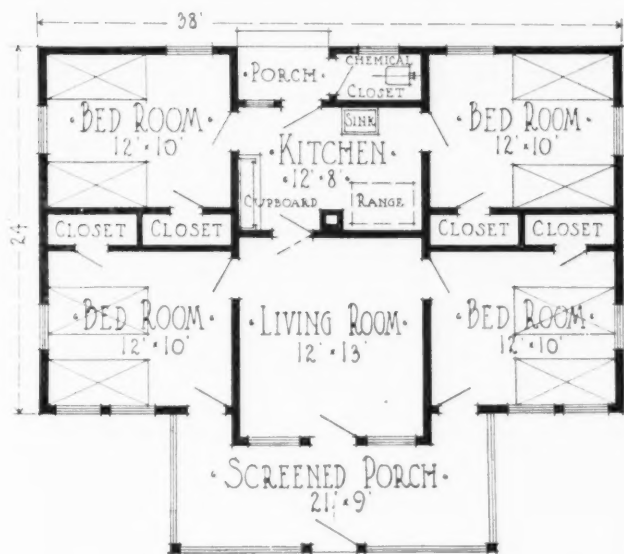


Perspective Sketches of Four Practical Summer Cottages Designed by Our Architectural Department. They range in Size from Three Rooms to Six Rooms, in Addition to the Big Screened Porch which is the Feature of Each. Satisfactory Sanitation is Provided, and Wall Board is Recommended for the Inside Finish. For Arrangement of Space See Floor Plan Diagrams Below and on Page Opposite.

in order to work out some of our pet notions regarding real comfort and convenience in summer cottages. There is nothing expensive or fancy about them. We hope a good many of our readers will find them serviceable.

Construction Using Wall Board

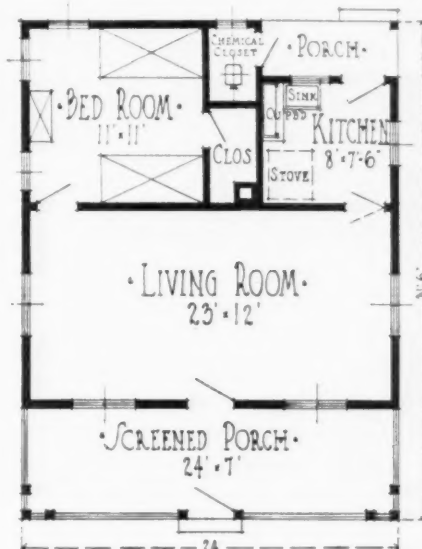
A method of wall board construction has been



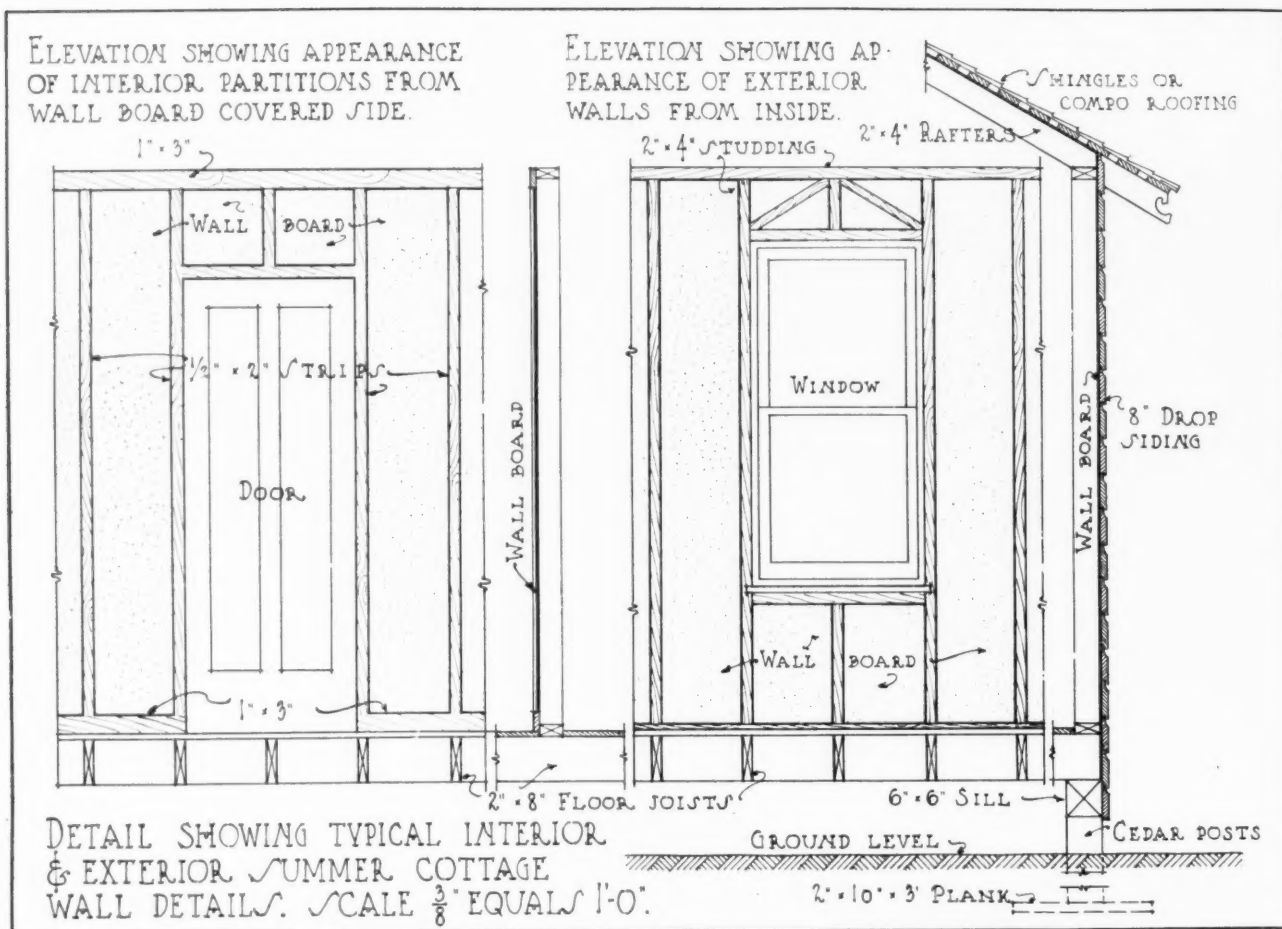
Arrangement of Six-Room Cottage No. 6819, Illustrated Above. Each of the Four Bedrooms has Cross Ventilation.

worked out, and is recommended for building these cottages or for any other summer cottage design which is very economical, and makes a really superior inside finish. The method is illustrated in the working drawing shown on page 40.

In this method the wall board is nailed to the outside of the studding, not to the inside. Over this, drop siding or 1 by 10-inch boards are nailed in clapboard fashion, the siding being nailed thru the wall board to the studding. No sheathing paper is used. Dressed studding is used, and stained a harmonious summer color, such as grass green. Viewed from the inside,



Arrangement of Three-Room Cottage No. 6820 Illustrated Above. An Ideal Small Cottage.



Details of Construction and Inside Finish Using Wall Board. The Wall Board is Nailed to the Outside of the Studs which are Dressed Four Sides, Stained, and Serve as Panel Strips, Making a Very Attractive Camp Interior. Drop Siding or Rough Inch Boards are Nailed on Over the Wall Board for the Exterior Siding. Inside Partitions Constructed of Wall Board and Light Panel Strips.

these studs serve as panel strips for the wall board. The wall board can be painted or left in its natural color; in fact, any variety of artistic color schemes can be worked out.

To carry out the attractive scheme of having exposed studding on all four sides of the living room, the inside partitions should have wall board on one side only of the studding.

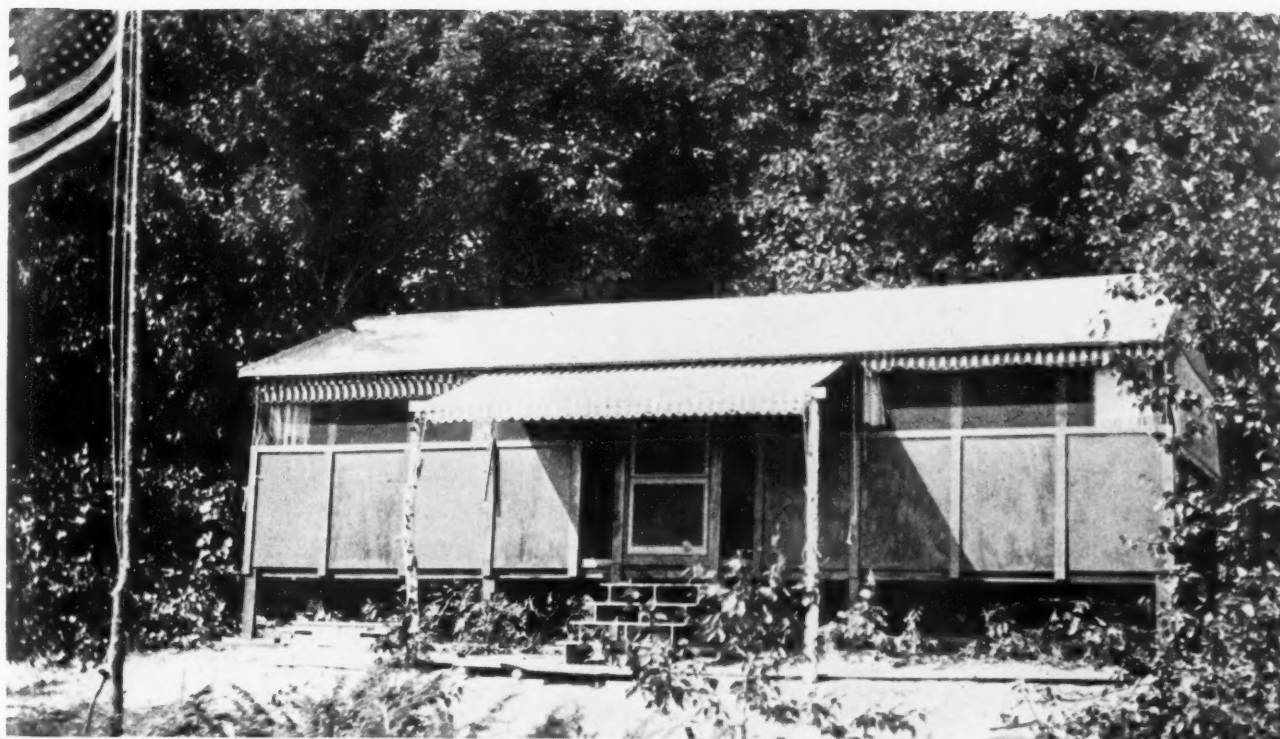
Wall board has come to be a very popular material for finishing summer cottages. The several photographs illustrated herewith show some of the ways it is used. At small expense, one can get a really smooth, clean interior by nailing on wall board over studs and rafters. Some old cottages have been remodeled and fixed up in this way.

A Wall Board Camp

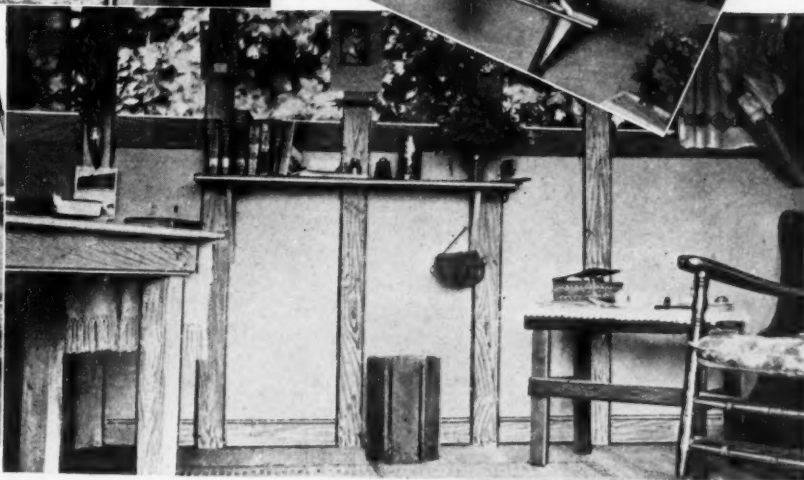
One of the most interesting examples of all wall board construction we have seen, is the Michigan lake



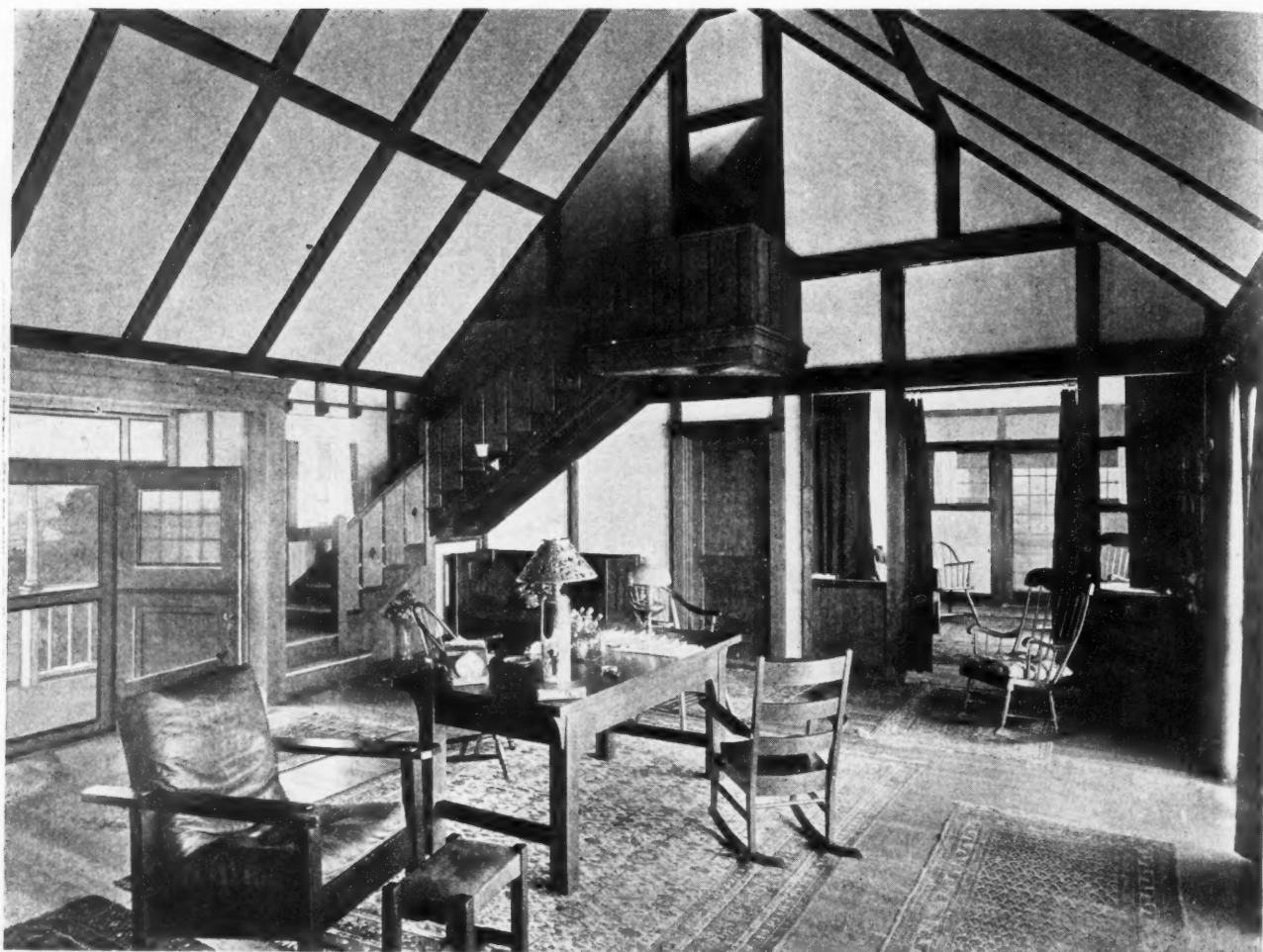
Interior and Exterior Views of Bungalow at Elma, New York. Designed by Green & Wicks. Wall Board Construction as Detailed Above Used Thruout. Five Thousand Square Feet Being Employed, all of which Was Put on in One Day by One Man and a Helper. Cost of Entire Six-Room Bungalow Complete, \$1,700. The Living Room Photograph Shows How Pretty this Wall Board Cottage Construction is.



A Michigan Camp Built Entirely of Wall Board, Size 32 Feet Front, by 13 Feet 4 Inches Deep; Cost Complete, \$140. Has Been in Use for Four Seasons with Great Satisfaction.



Four Views of Interior of Wall Board Camp Pictured Above. Waterproofed Wall Board Nailed to Rather Heavy Battens Forms All Walls and Partitions. The Roof is Made of Composition Roll Roofing Laid Over Matched Boards.



A Popular Summer Cottage Idea is the High Ceilinged Living Room, with Free Space Clear Up to the Rafters. A Finish of Wall Board Panels for this Type of Room is a Decided Advantage.

camp illustrated on page 41. This little cottage costing only \$140 has been in use for four summers—a

constant source of satisfaction and comfort. The saving on one summer's rent, paid the total amount invested in this cottage. The lower part of the walls is simply a series of heavy waterproofed wall board panels. The upper part of the walls is screened. Canvas awnings shield from the sun and beating rain.

Summer Cottage Sanitation

One of the trying problems of most summer cottage locations is that of sanitation. In each of the four plans illustrated at the beginning of this article you will notice provision for a chemical closet opening off the back porch. This can be either of the built-in or the commode type of closet fixture. The investment is small in either case, and the convenience and safety resulting is certainly worth the investment. The chemical closet manufacturers recommend having a separate small room with



While the Ideal Summer Cottage is Rustic in Appearance, the Women Folks Like a Cottage that is Clean and Easily Kept Clean. Wall Board Lining for Outside Walls and Roof is a Great Help in this Particular.

good ventilation as provided for in these plans.



Hints on Finishing Woodwork

A LARGE part of the pleasure and satisfaction of woodworking is in finishing the articles which one has made. A well made article should have a good finish and those which are not quite so good will be helped by it. Apply water stains with a sponge. If the work is smooth at the beginning it is easy to keep it so. Wipe off a stain as soon as possible after it is applied; there is less chance of raising the grain of the wood. It is not best to guess at weights and quantities; better use scales and measures.

When the pores of the wood are well filled there is a good foundation for a successful finish. You will not get this if the filler is too heavy; better make it quite thin. Two thin coats of filler, twelve hours apart, are better than one heavy coat.

The filler may be coated over after twenty-four hours, but if more time is allowed the results will be better. The best time to sand off the whiskers is



A Summer Home Well Constructed, and with a Slightly View. An Example of a High-Grade Summer Cottage Finished Thruout with Wall Board.

after the filling; they will break off easily then, being stiff.

Use several thin coats of shellac; let each dry at least twelve hours, then sandpaper. The work can be polished with half sweet oil and half alcohol, rubbed on with a piece of cotton.

If preferred, one may use a hard wax polish, such as is used for floors and furniture.

JOHN UPTON, La Fargeville, N. Y.



Summer Cottage Living Room with High Ceiling Prettily Paneled with Wall Board.

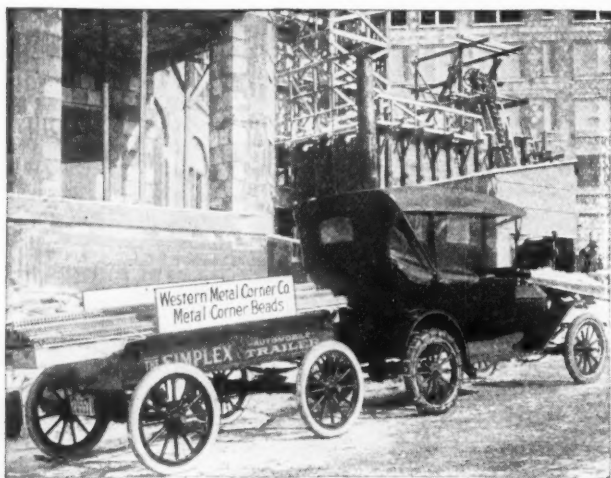
Putting Your Auto to Work

HOW CARPENTERS AND BUILDERS ARE USING TRAILERS FOR LIGHT, QUICK DELIVERIES.



Two Wheel Trailer Loaded with Millwork as Employed by D. S. Milloy, Lumberman of Erie, Pa.

"THERE is the best little accessory for my car I ever invested in," a Kalamazoo, Mich., builder remarked to the Editor a short time ago. "My work is pretty well spread out over town—usually have two or three contracts going at once, and with my car I can keep right in touch with all of them. Now, by hitching on this trailer I make my car do double duty by hauling light gear from one job to another, as it is needed, or for hustling out with supplies or materials needed in a hurry."



Light Four-Wheel Trailer with Front and Back Wheels Steerable for Short Turns.

Hundreds of builders in other localities are having the same experience as our Kalamazoo friend. The automobile trailer has arrived and is making good in actual everyday work on the job.

Many automobile owners have been really spoiling their cars by turning them into delivery wagons—loading up the back seat with heavy boxes, implements and

tools, all of which spoils the looks of a car, scratching the enamel and tearing the upholstery. The builder's automobile has been for practical use, and he hasn't hesitated to misuse it on occasion.

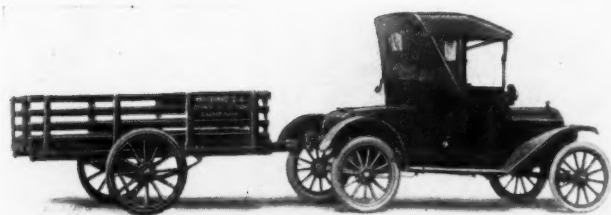
But now the trailer solves this problem in the most economical way. You can haul more than you can carry and do it much more safely and easily. To put a ton load on a light car will soon make it ready for the junk heap, but load a ton on a trailer and the light car will draw it with ease.

We have never heard that the auto trailer was invented and developed especially for builders, but it might well have been; it meets their requirements so exactly. Several types are available, so one can pick exactly what best suits one's needs. For attaching to light runabouts and touring cars there are two-wheel trailers and light four-wheel trailers. Then for attaching behind motor trucks there are heavily built trailers up to three, five and even ten-ton capacity.

The underlying fact, however, that makes the trailer an economical proposition is the same in all. It is the



Heavy Four-Wheel Truck Used as Trailer and Loaded with Brick.



The Trailer is Equipped with Pneumatic Tires and Artillery-Type Wheels for Fast Traveling.

fact that a bigger load can be drawn than can be carried. Load a truck or a car to its full capacity and it still has an effective draw bar pull of approximately one-half that rated capacity, which it can use for pulling a trailer. Thus a thousand pound truck full loaded will easily pull five hundred pounds more loaded on a trailer. Truck operators know that it doesn't do to overload a truck. Three tons hauled on a two-ton truck will soon put it into the repair shop; but haul the



No Load of Shingles was Ever Hauled Easier.

extra ton on a trailer behind and no harm will be done. The extra ton will be hauled for about 15 per cent additional cost for gasoline.

Users testify that they haul a loaded trailer without appreciable extra effort or strain on the car. Here is



Well Made Two-Wheel Trailer Loaded with Boxes.

a letter on this point from a Pennsylvania furnace contracting concern.

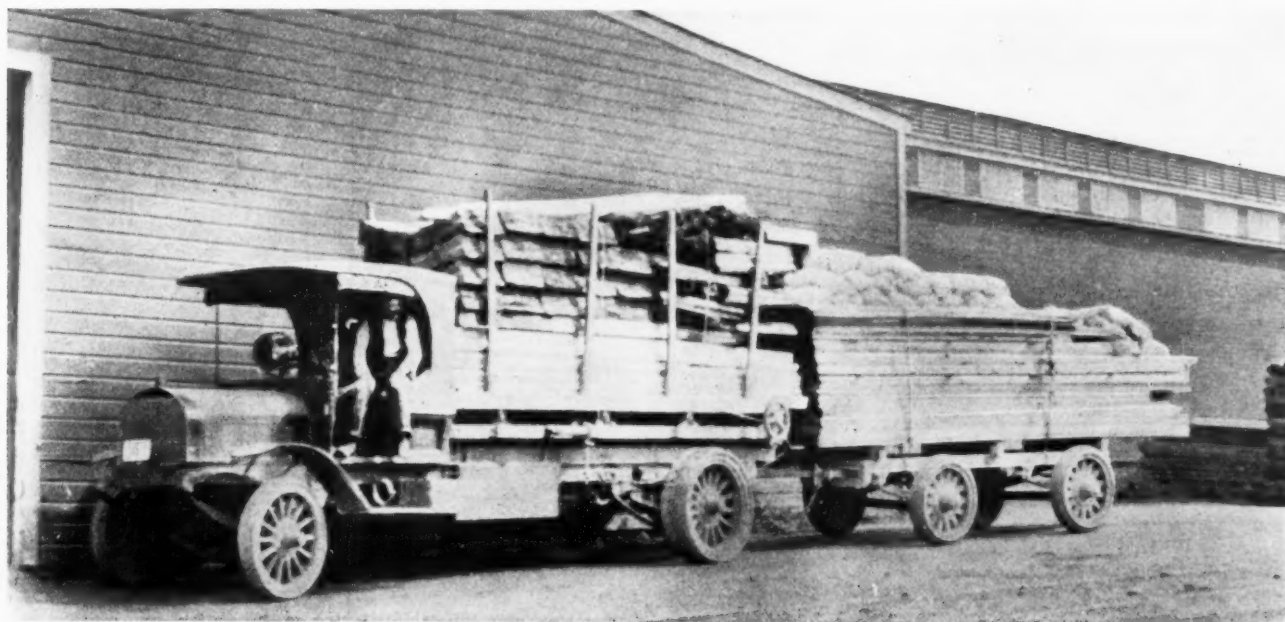
August 25, 1916.

"I have been using the trailer that I purchased from you now about six weeks, and it has already paid for itself in saving my dray bills.

"For example: This morning I loaded about fifteen hundred pounds on it and drove to Fairview in forty minutes, using one and a half gallons of gasoline, and making the trip without shifting the gears but once, and that was owing to being blocked in the middle of a hill by another machine.



Heavy Trailer with Special Side Dumping Body for Handling Sand and Crushed Stone.



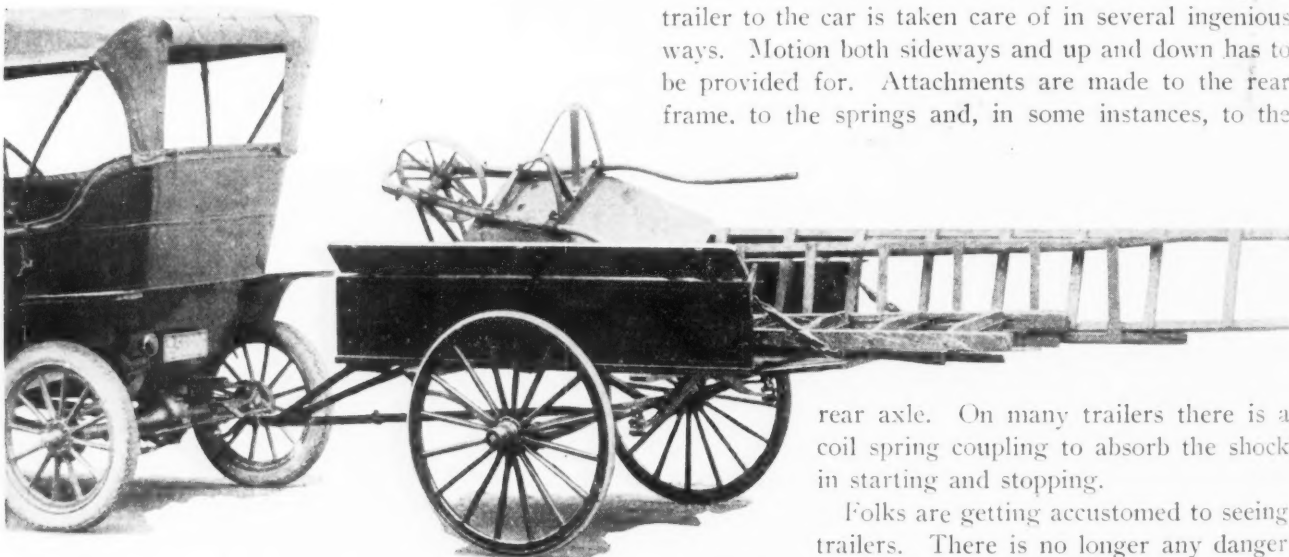
Heavy Trailer Used by Lumber Dealer to Cut Down His Hauling Expenses.



Trailers are Used by all Classes of Builders. This One is Making Money for a Furnace Contractor.

"Had I shipped the load by freight it would have taken my two men one hour to make the trip, and then at least two hours to get a dray to deliver the load to the job, making a saving in time of two hours and forty minutes at forty

well as strength. Rubber-tired artillery type wheels are provided and the steering gears are so arranged that the trailer wheels track exactly with the hind wheels of the automobile. The method of attaching the trailer to the car is taken care of in several ingenious ways. Motion both sideways and up and down has to be provided for. Attachments are made to the rear frame, to the springs and, in some instances, to the



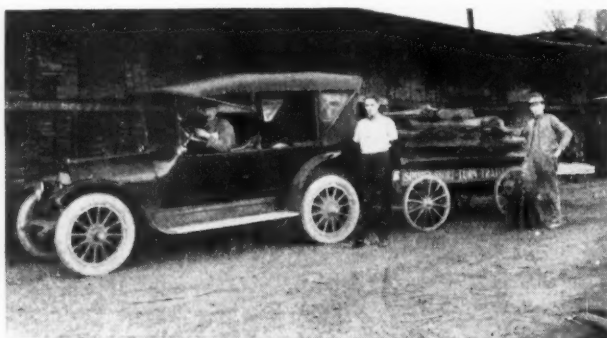
Off to the Job with Ladders and Wheelbarrow.

cents per hour, besides the freight charge of one dollar.

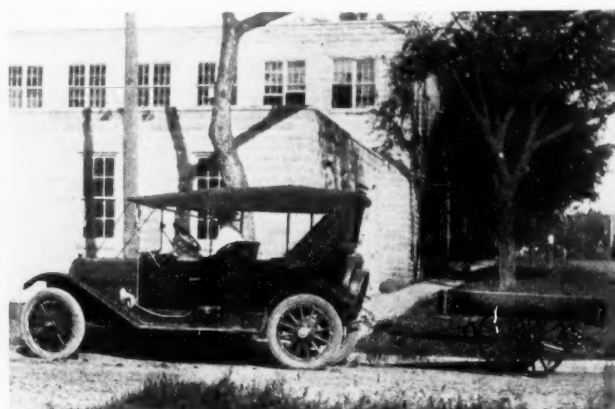
"We drove thru a ploughed field to get to the house where the wheels of the trailer sank in about 8 inches. We went thru this without effort on the machine. My machine is only thirty horse power. You can realize what the roads were this morning after the heavy rain we had last night, but we had no difficulty whatever in making twenty to twenty-five

rear axle. On many trailers there is a coil spring coupling to absorb the shock in starting and stopping.

Folks are getting accustomed to seeing trailers. There is no longer any danger of starting a riot by hitching a trailer to your inspection car, loading it with building materials and starting up the street. It is getting to look like the sensible business rig for builders. They don't cost much. Carpenters and builders are using them more and more.



Light 4-Wheel Trailer with a Good Load of Lumber.



For Quick Light Deliveries, this Trailer is the Thing.

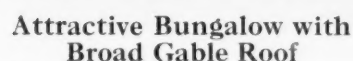
miles an hour, and with apparently as much ease as tho we had nothing attached to the car.

"THE FULLERTON FURNACE CO.,

"Per

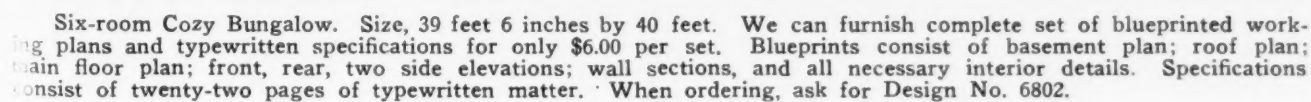
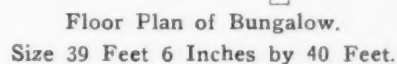
R. L. FULLERTON."

The automobile trailers are being constructed on automobile lines rather than following carriage or wagon standards. They have to be built for speed as



The exterior walls of this bungalow are finished with dark stained shingles and this contrasts pleasingly

Two bedrooms with a bath between occupy the back part of the house.



Artistic Family House of Generous Proportions

The accompanying perspective shows a large family home of unusually attractive design. The attention to the various architectural details forms an exterior that will attract more than passing attention anywhere. The projecting beams with their carved ends, the stucco porch pillars, and the smaller columns in the front window are all examples of the care that has been taken in handling the many smaller features of this design.

The stucco of the first story and the shingles of the second make an attractive combination. The porch, also, with its heavy white pillars and unusual roof construction, gives a suggestion of what may be expected after entering the front door.

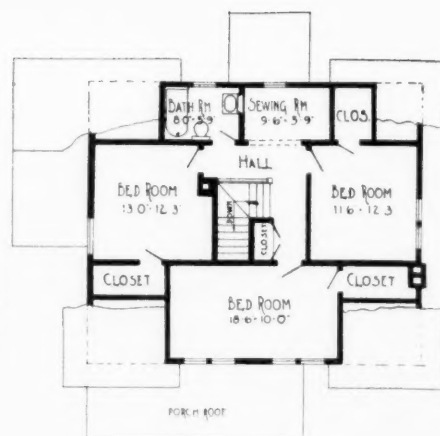
This is a typical house as constructed in our smaller cities in all parts of the country. It is handled in a more artistic way than most of them, but the general plan of construction is the same.

The foundation walls are generally of concrete and are carried down to footings at the level of the basement floor. The basement floor should also be of concrete as this material has been found by experience to be the best material for this purpose. The house is set about two feet above grade, which is sufficient to allow for windows to light the basement.

The first floor contains five rooms and



First Floor Plan.



Second Floor Plan.

Arrangement of House. Size 41 Feet 6 Inches by 30 Feet.

there are three bedrooms and a bath on the second. On this floor there is also a small sewing room. A large amount of closet space is provided on the second floor.

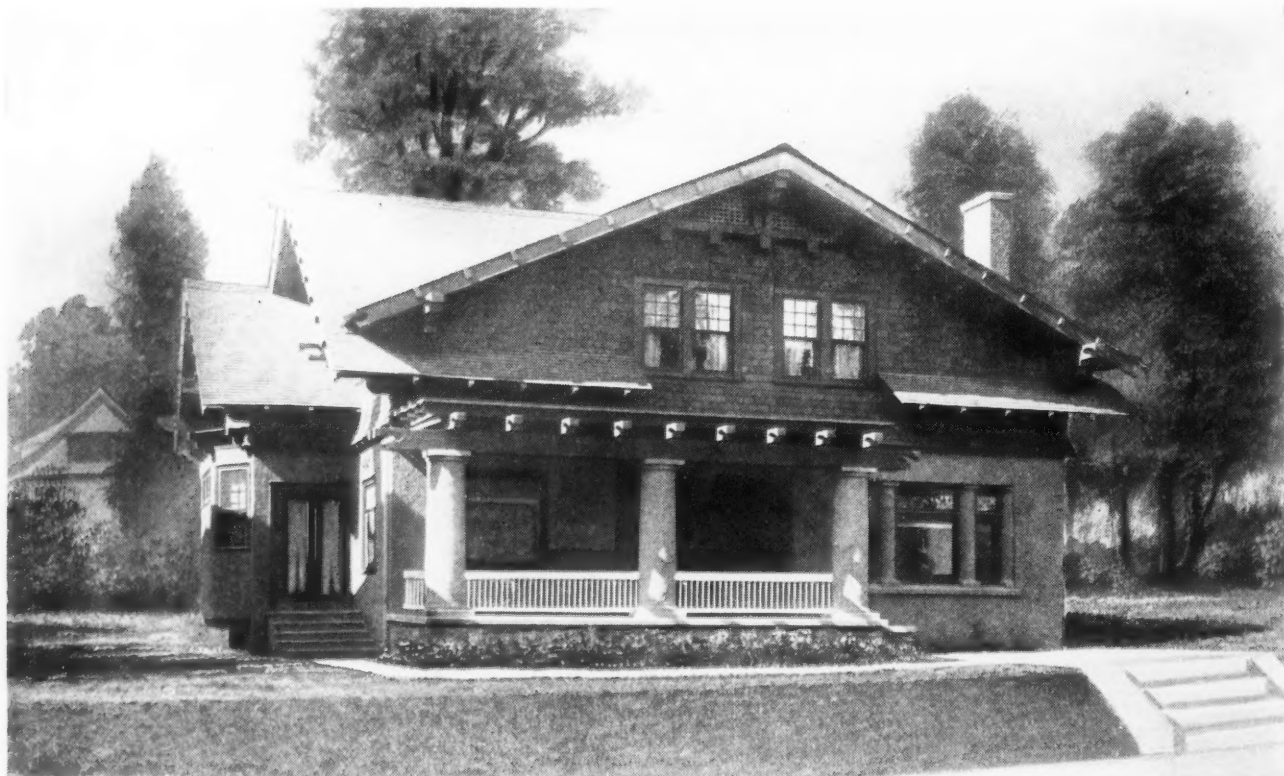
The front part of the house on the first floor is occupied by two living rooms and a hall. The larger of the living rooms has a fireplace along one wall opposite the front hall where it will appear most comfortable and cozy during the cold weather. In back of this room is a sun parlor that will be one of the most used parts of the house during all kinds of weather. During the summer the sash are generally removed and screens are inserted in their place. This porch has an entrance to the

kitchen so it can very often be utilized as a breakfast porch.

The dining room is on the opposite side of the kitchen from the sun parlor and can almost be called a sun parlor itself. A broad curved bay is built in one end and a buffet is placed in it. There is a side entrance that opens into this room.

The kitchen is rather small and compact and is arranged in a way that will be appreciated by all housewives. A rear entrance opens into the kitchen. The convenient cupboard placed along the wall near the entrance to the dining room will be a great help in serving.

The three bedrooms on the second floor are all of good size.



Beautiful home of nine rooms. Size 41 feet 6 inches by 30 feet. We can furnish complete set of blueprinted working plans and typewritten specifications for only \$10.00 per set. Blueprints consist of basement plan; roof plan; first and second floor plans; front, rear, two side elevations; wall sections; and all necessary interior details. Specifications consist of twenty-two pages of typewritten matter. When ordering, ask for Design No. 6796.



Comfortable Five-room Home. Size 37 feet by 37 feet 6 inches. We can furnish complete set of blueprinted working plans and typewritten specifications for only \$6.00 per set. Blueprints consist of basement plan; roof plan; main floor plan; front, rear, two side elevations; wall sections, and all necessary interior details. Specifications consist of twenty-two pages of typewritten matter. When ordering, ask for Design No. 6801.

Simply Constructed Cottage Bungalow

Cozy simplicity is the keynote of the beautiful little cottage of the bungalow type that is shown here. It is a home that is designed to give the greatest amount of pleasure to the occupants. The size and arrangement of all the rooms, the large and convenient basement, and the numerous windows combine to create a home of the maximum amount of comfort and usefulness.

Many people prefer a rather quiet, simple design for a home rather than the extravagant types that are often built. This design, No. 6801, will particularly appeal to them.

The roof and the walls are finished in shingles that are stained a dark color. This provides a pleasing contrast with the white trim of the windows and the roof. There are so many windows with their white frames and sashes that there are no broad flat expanses of wall surface to cause a monotonous appearance.

The house is built well above the ground in a fashion that is well known in the cooler parts of this country. In addition to providing a large basement, the house is insulated against the heat and dampness of the ground which may be a most important feature in certain climates.

As the house is almost square and of good size, a basement can be secured that will be a valuable part of the house in many ways. In a one-story house, such as this one, the basement is much more important than it is in a house of two or more stories. The basement can be divided into sections so as to secure

the maximum value out of this most important part of the house. Cold storage room, furnace room, and laundry can be provided and very often a small work room with a bench will be found useful.

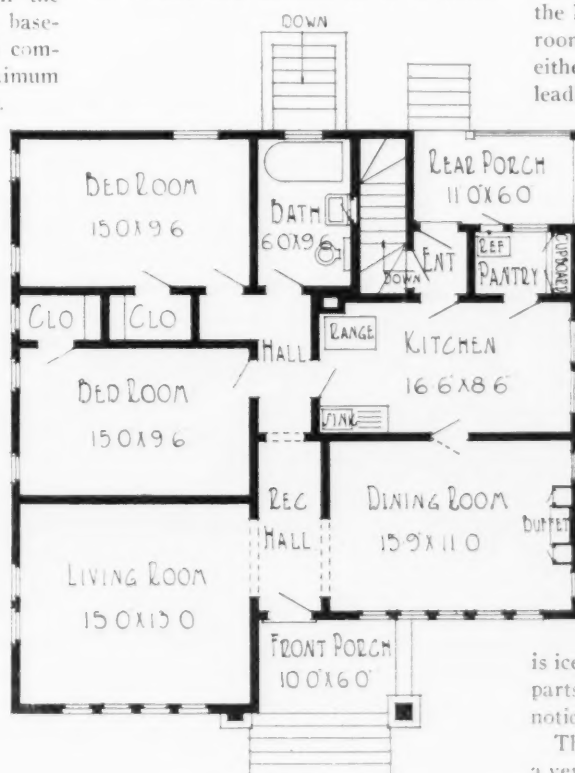
The entrance to this house is into a reception hall that continues back thru the house and which leads to the various rooms. A cased opening is placed on either side of the reception hall, one leading to the dining room and the other to the living room.

Six windows placed on two sides of the living room assure a room that is bright and cheerful. There is a large enough area of wall space so that some well-chosen furniture can be placed to advantage in this room.

The dining room is also as well lighted as the living room and because of the wide opening between the two thru the reception hall they should be finished in somewhat the same style.

The kitchen contains many features that will recommend it to the housewife. The convenient little pantry with its cupboard and the refrigerator that is iced from the rear porch are particular parts of this kitchen that are worthy of notice.

The porch of this cottage is handled in a very interesting way. It is set back under the main roof and the soffit has fancy exposed rafter ends projecting above.



Arrangement of Cottage.
Size 37 Feet by 37 Feet 6 Inches.



Distinctive summer cottage design. Size, 42 by 26 feet. We can furnish complete set of blueprinted working plans and typewritten specifications for only \$6.00 per set. Blueprints consist of basement plan; roof plan; main floor plan; front, rear, two side elevations; wall sections; and all necessary interior details. Specifications consist of twenty-two pages of typewritten matter. When ordering, ask for Design No. 6809.

Summer Cottage with Special Living Room

The floor plan and perspective shown here, as Design No. 6809, illustrate a handsome little cottage that is suited particularly for a summer cottage and is also well enough made so that it can be used the year round if desired.

A large basement is shown in the illustration but if the house is to be used as a summer cottage only, the basement would probably not be built. The cottage should, however, be placed about as far above grade as shown here in either case. The protection against dampness will make this type of construction more than worth the cost.

A most striking feature of the exterior is the porch with its pergola roof and latticed sides. The floor and the steps are made of dark vitrified brick which is serviceable and easy to keep clean and at the same time is very attractive in appearance. The porch is a most important part of a summer cottage and an effort should be made to get a distinctive design that will appeal to everyone. There are always many visitors and an attractive porch arrangement will give the cottage a fine appearance.

A large, roomy living room is also most important in a summer cottage and is a special feature of this plan. It extends back thru the center of the house and is 14 by 25 feet. The living room seems even bigger than it is because of the large fireplace set in one of the back corners. A large living room is appreciated in nearly any house but especially so in a summer cottage. It gives the impression of comfort and carries the idea that the house was made to live in. Large living rooms are much

more restful than a series of smaller rooms. A badly cut up floor arrangement always gives the idea of confusion.

The living room occupies the entire central part of the house with two bedrooms on one side and a dining room and kitchen on the other.

If a kitchen is not arranged for the maximum amount of convenience and comfort it is particularly unpleasant in the summer time. It is generally warmer in the kitchen naturally and if the arrangement is such that unnecessary steps are required for carrying on the work, the preparing of meals will be a most distasteful occupation.

A compact, convenient kitchen will be appreciated by everyone and a study of this plan will show the care that has been exercised in arranging this room. The kitchen is only 8 feet 6 inches by 10 feet 6 inches. The sink is placed under the window, where it will receive the maximum amount of light. Along the wall near the door to the dining room is a handy cupboard.

The dining room is also large and attractive. The window seat is a pleasing feature.



Floor Plan of Summer Cottage. Size, 42 by 26 Feet.

Modern Two-Flat Building an Ideal Investment

The 2-flat is considered by many the ideal home investment for the family of moderate means. "Live in one and rent the other" has been the slogan of the 2-flat proposition. The income from one apartment pays all the running expenses of the building, including interest on the investment, and the entire amount one would pay as rent can go to pay off the principle. Accordingly with this type of building the owner can pay out his obligation much sooner than would otherwise be possible.

It is estimated that at the present time there are over ninety-five thousand 2-flat buildings in the city of Chicago alone, which shows something of the popularity of this style residence both as an investment and as a dwelling.

The accompanying design is handled in the most up-to-date manner. There are five large, well-lighted, nicely arranged rooms in each of the two apartments. The large living room, the private porch, the generous closet space, are all pleasing features of this design.

The exterior is face brick trimmed with stone or terra cotta. If built on a wide lot where the sides would be exposed, good looking brick should be used all around; if on a narrow lot common brick can be used on the sides without objection.



A friend had given Pat a "parrot" which in reality was a baby owl. Several days after, Mike happened by.

"Is the parrot spakin' yit?" asked Mike.

"Niver a word," answered Pat. "But th' little divil is doin' a lot of thinkin', he is."



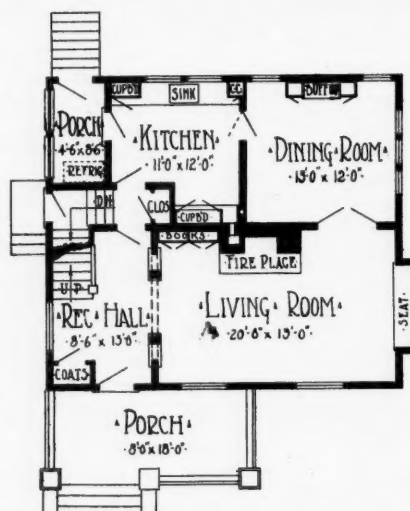
City flat building suitable for narrow lot. Size, 24 feet by 56 feet. We can furnish complete set of blueprinted working plans and typewritten specifications for only \$15.00 per set. When ordering, ask for Design No. 6807.

Six Room Story-and-a-Half House

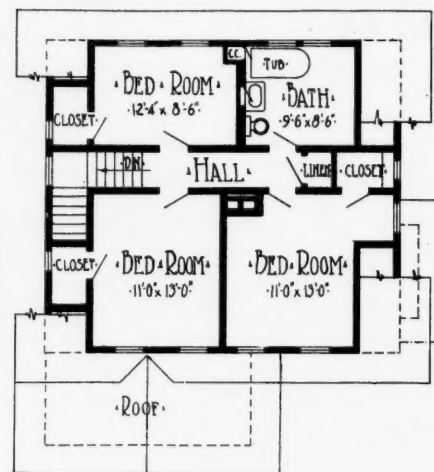
A close study of the floor plans and exterior of this little home shows many features that will appeal to home-lovers. Its attractive appearance and convenient arrangement combine to make a real home that will be a source of enjoyment to the owner and the object of much admiration on the part of visitors.

The little porch possesses the good features that are peculiar to detached porches. In hot weather the detached porch takes advantage of any breezes that happen to be blowing and is nearly always comfortably cool even in the hottest weather. It also breaks up the straight lines of the house and adds considerably to its appearance from an artistic standpoint. Comfort and beauty to the largest degree are provided in the porch shown in this design. The low roof is an inviting feature.

A study of the floor plan will bring out the attractive character of the living room and its value for a house that is intended as a home. It is placed along the front of the house and is not entered directly from the front porch, but from a reception hall that opens into



First Floor Plan.



Second Floor Plan.

Arrangement of House. Size, 36 Feet by 26 Feet 6 Inches.

the end of the room thru a wide cased opening. The room is rather long, so the fireplace is located on the side which makes the room seem wider than it really is. The seat in the bay window at the end balances up well with the fireplace.

The arrangement of the living room and dining room results in two rooms

that are detached from each other rather more completely than usual. This is a good feature, as the living room is large enough so that it does not need another room to join to it to secure the large open floor space that is desired in all homes.

The second floor is occupied by three bedrooms and a bath.



Well arranged six-room house. Size 30 feet by 26 feet 6 inches. We can furnish complete set of blueprinted working plans and typewritten specifications for only \$9.00 per set. Blueprints consist of basement plan; roof plan; first and second floor plans; front, rear, two side elevations; wall sections, and all necessary interior details. Specifications consist of twenty-two pages of typewritten matter. When ordering, ask for Design No. 6804.



Cement stucco house with attractive sun porch. Size, 24 by 28 feet. We can furnish complete set of blueprinted working plans and typewritten specifications for only \$8.00 per set. Blueprints consist of basement plan; roof plan; first and second floor plans; front, rear, two side elevations; wall sections; and all necessary interior details. Specifications consist of twenty-two pages of typewritten matter. When ordering, ask for Design No. 6810.

Five-Room House with Sun Parlor Porch

Any house that has a porch like the one shown here would be a delight to anyone. In the cold weather it is entirely enclosed with glass and in the warm weather screens can be substituted for the sash. Sun parlors are becoming more frequent in house designs just as are sleeping porches. The value of plenty of fresh air and sunshine is being appreciated more all the time.

This porch is 24 by 8 feet, which makes it large enough so that it really adds another room to the house. During all kinds of weather this room will probably be in use more than any other in the house. The porch and the living room make an attractive combination for living purposes.

The living room extends across the entire width of the house and is 12 feet wide. A set of book cases is built

into one end of the room and the fireplace is located in the other. Three wide windows open to the front porch.

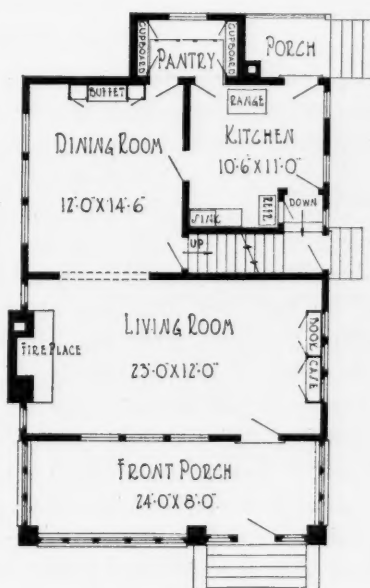
The dining room and kitchen with their connecting pantry present an efficient arrangement. The pantry is built in the back part of the house and will open to either the dining room or the kitchen. There is also another direct

door from the dining room to the kitchen. The dining room is made bright and cheerful by the three wide windows on the side. The built-in buffet also adds to the convenience of the dining room arrangement. The stairs to the second floor are reached thru the dining room.

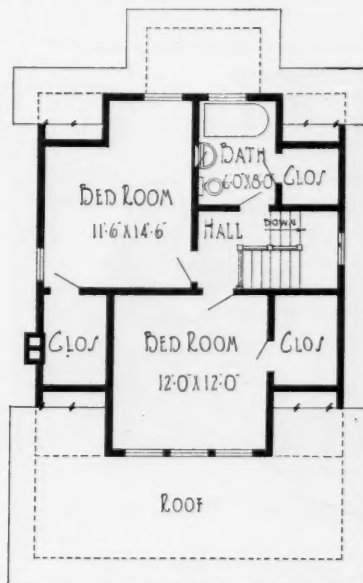
The second floor plan calls for two bedrooms and a bath with a connecting hall. The ample closet room will be a source of pleasure to the housewife in this home.

The exterior of this house is finished in cement stucco of a dark color. This contrasts pleasantly with the white trim of the windows and doors. The projecting dormer breaks up the flat character of the roof in very good style.

Cement stucco makes an ideal exterior wall for this little dwelling; applied on metal lath or stucco board and properly waterproofed, it is durable and pretty.



First Floor.



Second Floor.

Arrangement of House. Size, 24 by 28 Feet.

"You Can't Buy a Reputation for Square Dealing. You've Got to Earn it"

—THE MAN FROM THE LUMBER YARD

"As ye sow, so shall ye reap" is as true today as when spoken on the hills of Palestine. It is as true with the builder and man of business as with the gardener. EDITOR.

I WILL never forget when I first heard the expression, "Come clean."

You may remember my mentioning in a previous letter a contractor by the name of Carl Anderson who was so careful in keeping his equipment in prime shape. He was generally very careful in every agreement he made, because he knew that he would always toe the mark. One day an acquaintance asked him to name his price for putting up a five-room house where the material would be furnished all ready cut. Anderson had never put up a ready cut house and, wanting the experience, named a price that would clear him if everything came as per specification. His proposition was accepted at once as the car containing the material had already been shipped.

The Unexpected Happened

Things might have gone better if it hadn't rained the day the car arrived. It rained that day, and the next, and for several days after that—in fact, it was a typical "spring" wet time. Of course, the car had to be unloaded and the problem was what to do with the complete bill of lumber and millwork for that house.

There was no extra space on the building site for putting up a temporary storage shed. So Anderson finally arranged to tuck part of the millwork away in a neighboring barn; part went into another neighbor's cellar; and part he hauled across the town to his own shop storeroom.

At last he was able to get to work on the job, and began hauling in the lumber as he needed it.



To "Come Clean" Cost Carl Anderson \$70.00 on a Ready Cut House Job; But It Paid.

I am an old time lumber yard man and calculate to know how big a load of dimension it takes to frame a five-room house. I could have told Anderson when he loaded up that there would be either one of two things on that ready-cut job—either shoddy spacing of timbers or a shortage.

And sure enough it was a shortage of more items than one, for Anderson is a builder who simply won't tolerate shoddy construction. The working drawings sent with the job showed main roof rafters spaced six inches too far apart. "We'll need ten more rafter pieces, said Anderson.



Meet Old Grin, Who Had the Winning Smile.

No doubling of studs around openings or at corners was provided for. "None of that for mine," said our contractor friend, remembering his reputation for good work.

And so on thru many other items of framing, outside finish and inside trim it went. "Perhaps this way of building goes some places," mused Anderson; "but I'm not going to introduce it around here, even if this present customer of mine probably would be satisfied with it."

Come Clean

Several days after the house had been completed I stepped into Anderson's shop and found him wearing a disgusted expression as he looked over some figuring. His dour expression changed as he saw me and said: "That ready-cut job lost me seventy dollars, but I came clean." There was an expression on his face that I believe would have taken him past St. Peter if he had been knocking at the pearly gates. Ever since that time when the temptation had been strong to fudge, I say to myself, "Come clean, old boy." Virtue is not its only reward. Anderson's "coming clean" got him several good contracts that more than paid his loss on the erection of the ready-cut house.

Did you ever consider that all of some men's pay isn't in their envelopes? Some cut so close to the line that the shavings come off of the other fellow. Such a chap can never understand Carl Anderson's

feeling when he said, "but I came clean." I imagine that such a feeling would be as great a surprise to some people as the first drink of ice water was to the native of Manilla when Dewey was Uncle Sam's man in Man-illa.

I would like every penny pincher to know that the best work in the world is not done for money. Devoted mothers, conscientious politicians, teachers and many other self-sacrificing people who work for a principle or an ideal give much more to the race than is covered by their pay check. It is frequently the case that money depends on luck. Happiness, content and real success do not. And above all, a good reputation must come from deserving.

You can't buy a reputation for square dealing. You've got to earn it.

The big prizes in money, the kind that pay income taxes may go to the lucky, but the real prizes of living always will go, as they always have gone, to those who work conscientiously, who don't kick at hard knocks and who live with a smile.

Introducing Old Grin

One of the assets of our limber yard that was never taken down at inventory time was Old Grin. He had three and a half legs, a coat of hair always worn by a mongrel, a stomach that was never overloaded, but a disposition and smile that entitled him to a golden harp in the dog heaven.

I really believe that Old Grin taught me to smile. Since those days I have had some bumps, have been crowded up in the corner until I could feel my bones crack. The first aid has always been a smile. The next time you are up against a hard proposition and feel that life is not worth living, SMILE. Don't work off one of those sickly, "I want to be an angel" smiles nor one of those nasty grimaces that some people call a smile. I mean the kind you have when you are real hungry and find a big dinner of chicken and mashed potatoes ready for you.

These lines give the idea:

"The thing that goes the farthest towards making life worth while,
That costs the least, and does the most, is just a pleasant smile."

These lines show the cause and effect:

"The smile that bubbles from a heart that loves its fellowmen,

Sawdust

Doing well the hard to do is the thing that makes prestige.

Nothing great was ever achieved without enthusiasm.

The man that isn't willing to do his best isn't deserving of the best.

Wishing never gets there; work does.

Do what you're paid to do and then some. It's the "then some" that makes a reputation.

The wise man is the one that not only has learning but uses it.

We don't admire the fellow who never falls as much as the one who gets up every time he falls.

Don't stop when you win the first victory. That's not the end. It's only a step.

Trying to do nothing and succeeding at it isn't in it with trying to do something and failing.

Will drive away the cloud of gloom and coax the sun again."

Can you get the profit out of anything else that you can out of a smile?

"It's full of worth and goodness, too, with manly kindness blent, It's worth a million dollars and doesn't cost a cent."

By Comparison

The best way to judge is by comparison. I remember how I was impressed by the height of the Opera House and the Palace Hotel at home. But they always

looked small after I had been up to the top of the Masonic Temple Building in Chicago. For years it stood in my mind for height. After I had looked down from the top of the Woolworth Building in New York the Chicago structure has been a midget.

Sometime when I feel stinking mean I am going to write about that greatest of kill-joys, the Knocker. But I don't want anyone to read it. It will leave a bad taste in any one's mouth.

Made in Milwaukee

I chanced to be in Milwaukee early in May. Which Milwaukee? The one that is famous. What has made Milwaukee famous? Her beautiful shore line, wonderful buildings, progressive population, fine climate, and fifty-seven other good things. She is the queen of a wonderful state. She has excellent newspapers. It was thru one of her newspapers that I got acquainted with Wm. G. Williams. I like Williams. I don't

DURING PAINT UP & CLEAN UP SEASON AND ALL THE YEAR AROUND

WHEN YOU WANT TO

FIX THAT FENCE—
LAY THAT FLOOR—
HANG THAT DOOR—
BUILD THAT SMALL
BUILDING or COTTAGE
or any big carpenter job

SEE

Wm. G. Williams
GENERAL CARPENTER
CONTRACTOR & BUILDER
Main 653 352 Jackson St.

The Ad that Introduced Williams, the Builder.

know whether he is short or tall, lean or fat, whether he eats limberger or rare roast beef. I never saw him, but I like him.

Read his ad. that I clipped from the Milwaukee paper and have had reproduced. Read it and you will like him. I don't care if his bookkeeper or some other hired man wrote that ad.—it must still be like Williams.

He could have used type that would have made the ad. stick out more plainly, but it is a good ad. Can

any of you beat it for telling the story in a concise way? He gives all the data. Any one wanting his services can telephone, telegraph, write or call. Notice that second line, how inclusive it is.

I don't know if Williams is a big financial success. He may have some weak spot in his system, some leak in his business that has kept him from making big money. But his ad. is good.

We always have and always will use the dollar mark largely in spelling success. But the man of fifty who has kept his eyes open has different ideas from the one of twenty.

I have known many folk of midget intellect who wore No. 9 shoes, and people of grand souls that lived in tiny homes. It isn't the environment that makes the man, but something inside. You must be careful of what you say. You must be doubly care-

ful of what you write because you can't put a smile behind your words. How much more careful must you be when you address thousands of people. I am not a so-called ad. expert. Some ad. experts are good, they get into the true heart of things. But the great big majority put no more individuality into an ad. than an automatic machine would.

I do know human nature and do know when an ad. would "listen good" to the casual reader.

I am very much interested in knowing what our readers are doing in the way of advertising, and I want to be of any possible assistance at any time you feel like spending a postage stamp in writing me. You can count that I will spend a stamp and my time in replying with the best I have.

Sincerely yours,
THE MAN FROM THE LUMBER YARD.

A Southern Farmhouse for a Small Family

DESIGNED FOR THE OFFICE OF PUBLIC ROADS AND RURAL ENGINEERING, UNITED STATES DEPARTMENT OF AGRICULTURE

By M. C. Betts, Architect

A SOUTHERN farmhouse for a small family is shown on the accompanying plan, prepared in the Office of Public Roads and Rural Engineering of the department. The plan was developed after extensive surveys in the South to determine the household needs of families with reference to local agriculture, climate, and domestic help. The aim primarily is to provide: (a) A cool and convenient kitchen and dining room for the housewife; (b) bedrooms and living room with the best exposure; (c) facilities for outdoor sleeping; and (d) an easily heated house, cool in summer and yet with sunny rooms in winter.

The arrangement of dining room and kitchen constitutes the chief feature of the plan. The china closet, opening into

both rooms, saves a great many steps between the kitchen and the dining room. The clearing up after meals can be accomplished with a very few steps, dishes being passed thru on the wide countershelf, washed at the sink, drained, and returned to the china closet, where they are available from either side.

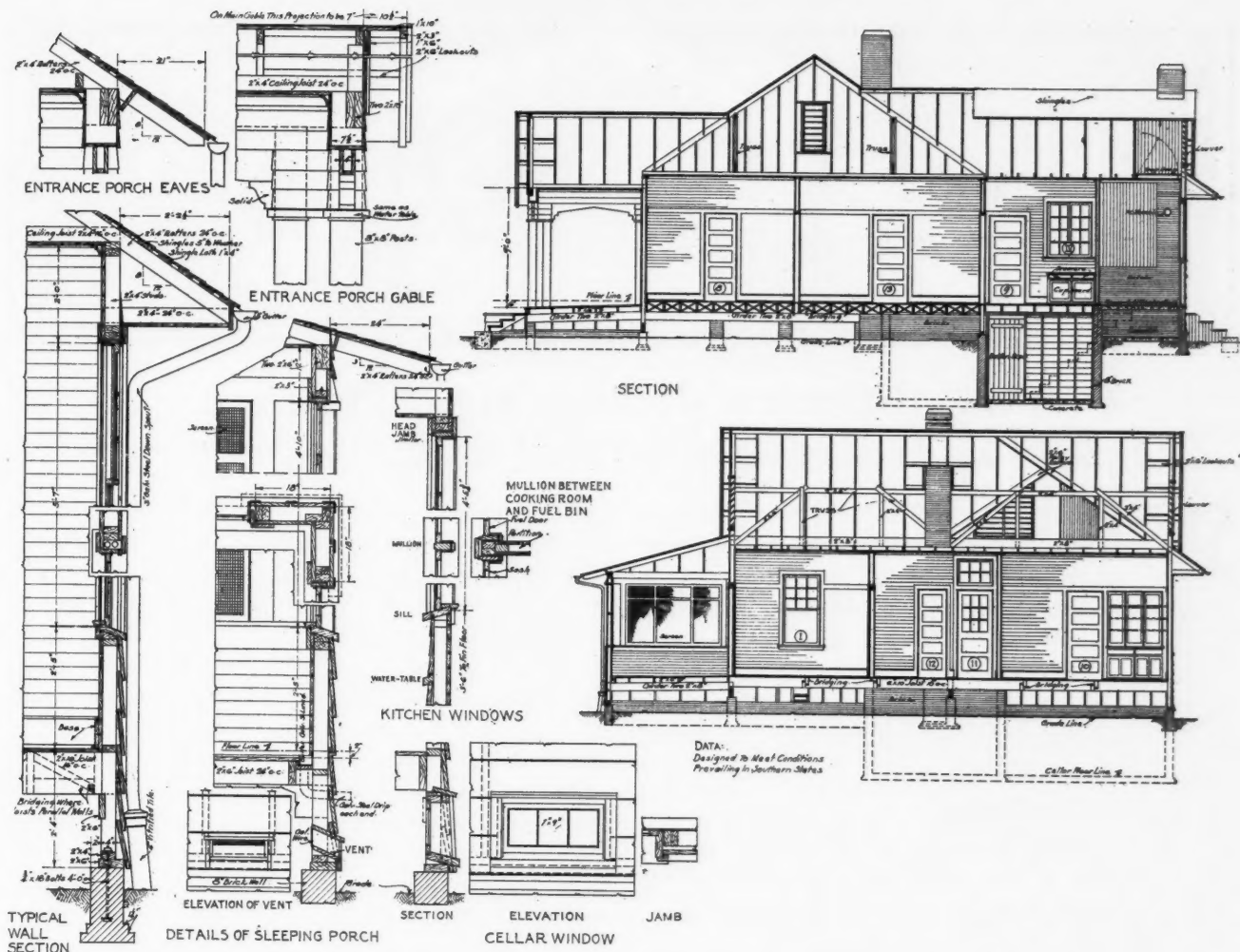
The kitchen is small, well lighted, conveniently arranged, and cool, by reason of the facts that the range is in a separate room and the windows on opposite sides permit of cross draft. The distance from the range to the other fixtures is no greater than in most farm kitchens; and if it were, the extra step or two would not offset the marked advantage of coolness of the workroom where the greater part of the kitchen



Floor Plan of Southern Farm House Recommended by Uncle Sam.



Sketch of Six-Room Farm House Designed for Comfort, Convenience and Coolness.



Details of Construction of Southern Farm House as Recommended by U. S. Dept. of Agriculture.

work is done. This is a matter of considerable moment, since so many farm wives in the South are now doing their own housework.

The cookroom ceiling has a large opening which permits the heat and cooking odors to escape thru a ventilator in the gable. Near the stove, to give light and air, is a double-casement window. A grated opening near the floor, in the wall between the cookroom and the kitchen closet, draws air from below the floor and promotes circulation from the floor upward and helps to keep the lower part of the room cool. In winter, if it is desired to keep the heat in the house, the door between the cookroom and the ventilator can be kept open and the ventilator and grating closed when not needed to carry off odors. The separate and well-ventilated cookroom will insure a dining room which is cool and free from odors.

The fuel room, filled from outside, is right at hand, obviating the necessity of carrying in fuel every day.

The bathroom is readily accessible from all parts of the house, and can be used for washing up by the men of the family coming from barn or fields with-

out going thru other doors. The closet on the rear gallery is intended for boots, rubber coats, etc.

Heating System

Instead of open fireplaces for heating purposes, the drawings for this house provide for a hot-air furnace installed in a pit beneath the bathroom. The cost of installation would not greatly exceed that of the two chimneys, with two open fireplaces each, which would be necessary to heat all the rooms. The upkeep would be less and the efficiency and comfort far in excess of that afforded by open fireplaces. If the situation is low, with water near the surface, the house can be raised higher from the ground, the pit and cellar walls being carried down but 3 feet or so. They should be built of concrete and made waterproof. Space for fuel storage is provided under the rear gallery, and there is a vegetable cellar under the kitchen.

Gallery and Sleeping Porch

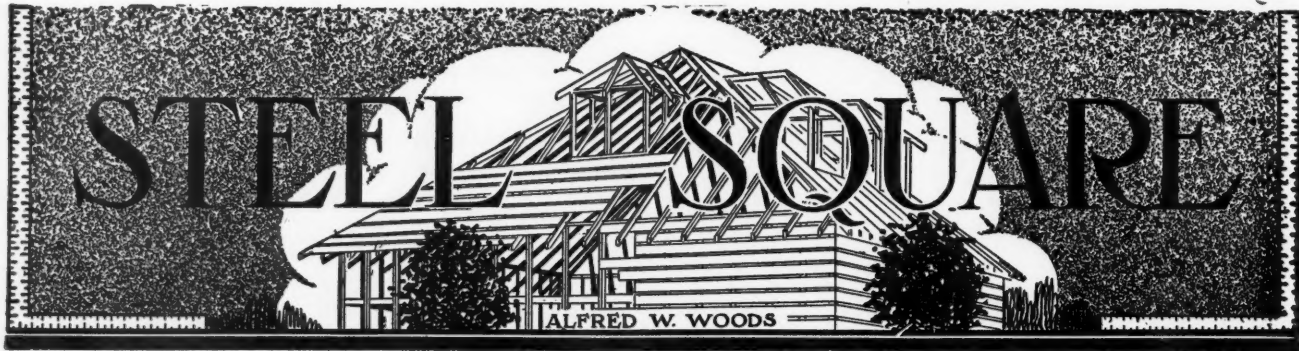
There is less front gallery to this house than in most southern farm-houses. The reason for this is that while

galleries add to the coolness of a house in summer they keep the winter sun out, making the house damp, cold, and cheerless. Extensive galleries add to the housekeeper's work. If a house has wide eaves and good roof ventilation and is placed so that it is partly shaded by trees, the same beneficial effect afforded by galleries is had in the summer time, while in winter the sun will penetrate each room at some time of the day.

The summer temperature within a house is largely influenced by the presence of near-by trees, which, even if they do not shade the building, prevent or lessen radiation from the ground. The plan, however, does provide a comfortable front gallery, and the sleeping porch can also be used as an outside sitting room.

Two sleeping compartments can be provided on this porch by using a movable partition or screen.

Complete working drawings for this house may be obtained by those contemplating building, on application to the Office of Public Roads and Rural Engineering, United States Department of Agriculture, Washington, D. C.



Possibilities of the Steel Square

EXEMPLIFYING THE RELATIONSHIP BETWEEN CIRCULAR AND STANDARD MEASURE IN CONNECTION WITH THE STEEL SQUARE FOR OBTAINING MITERS

WE have been asked to exemplify circular measure and what relation it has to the steel square in roof framing in general.

This is the theory that we have been working on in

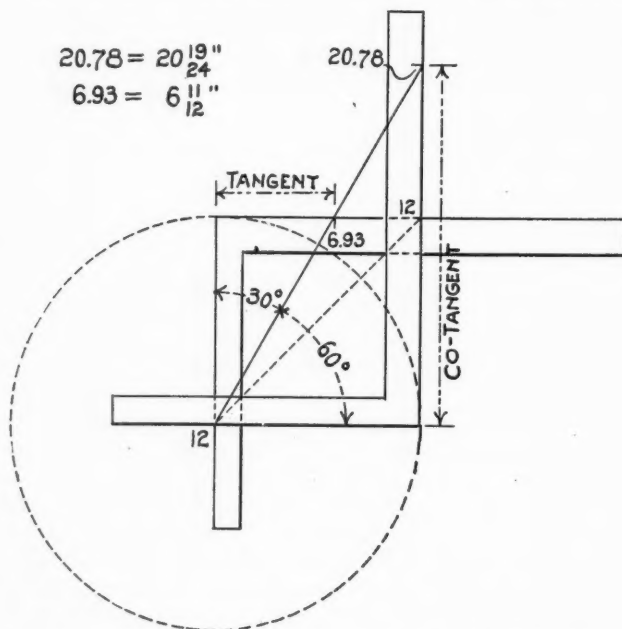


Fig. 1. Illustrating the Tangents for 30 and 60 Degrees.

practically all of our writing in the past twenty years; and in the course of our writing for this Magazine have given the fundamental rule from which the calculations are based. But as new readers are constant-

ly being added to the "A. C. & B." family, we feel justified in giving it again, tho in somewhat different form and, we believe, in a more simplified manner.

Without waste of words, we will assume that all understand that in circular measure the circle is divided into 360 parts, called degrees, and these parts again divided into 60 parts, called minutes, and these parts again divided into 60 parts, called seconds. However, for our purpose, we will drop the minutes and seconds and consider only the degree divisions of the circle. By referring to the illustration in Fig. 3, it will be seen that the circle is divided into 8 equal parts, and one of these parts is divided into 45 equal parts. These divisions represent degrees, and by continuing the division lines to the tangent line (blade), will give all that is needed to catch any angle with the aid of the steel square. This may seem a little strange to the casual observer, but it is a fact, as will be proven when applied to standard measure, as follows:

Suppose the radius of the circle to be 12 inches and we apply the square with the figure 12 on the tongue at the center of the circle. Then the figures shown at the right of the blade represent the length of the tangent for the corresponding division on the tangent line.

It will be seen that the tangent for the 45 degree line is 12 inches and, as we said before, there is no need of going beyond this point to catch any angle obtainable with the aid of the square, because the figures on the tangent line above this point (not given)

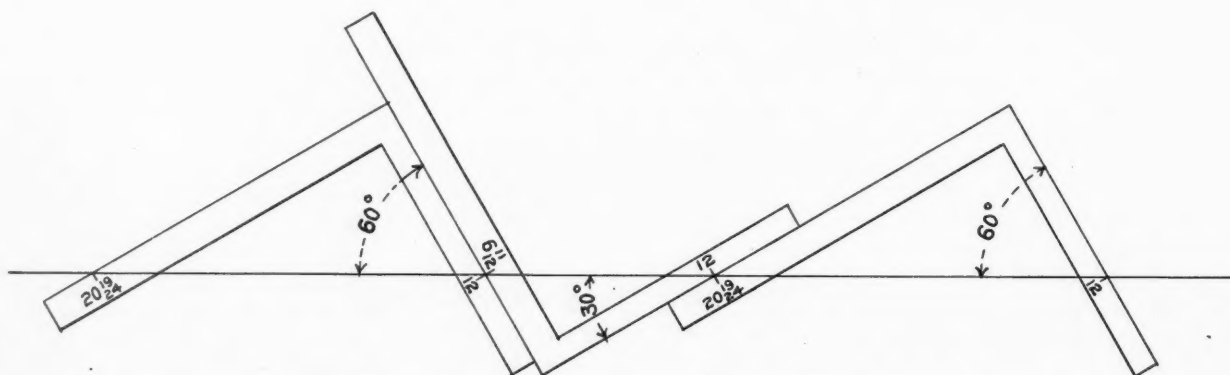


Fig. 2. Thirty and Sixty Degrees Showing Same Angles as Proven by Straight Edge.

would represent the co-tangents and are therefore simply a repetition of what may be obtained below 12 on the blade.

Then again, the co-tangents increase in length very rapidly and pass beyond the length of the blade at a fraction above 63 degrees, and if continued on up to 89 degrees, the co-tangent would be 57' 3½" long. In other words, it would require a square with a blade 57' 3½" long to represent the co-tangent for 89 degrees.

The question then naturally arises, how can the angle for 89 degrees be obtained below 12 on the blade? Simply by taking its complement, which is 1 (90 — 89 = 1) and the tangent for this is shown to be .21". Then 12" on the tongue and .21" on the blade will give the angle for 1 degree and also for 89 degrees;

the blade giving it for the former and the tongue for the latter. In other words, these proportions give the same result for 89 degrees as the square would be with the 57' 3½" blade. The only difference is, in one the tangents and co-tangents are reckoned as being on one side of the square, while in the other the tangents are reckoned on the blade, while 12 on the tongue is made to represent the co- or complement tangent.

Thus, for 88 degrees it is reckoned in the same way as for 2 degrees, 45 degrees being at the half way place between the reckoning points is naturally equal on the square as 12 and 12; consequently either side of the square gives the same results. But if the angle for 46 degrees is desired, then we must look to its complement, 44, which is shown in the table to be 12 and 11.58, but the angle sought will be on the tongue

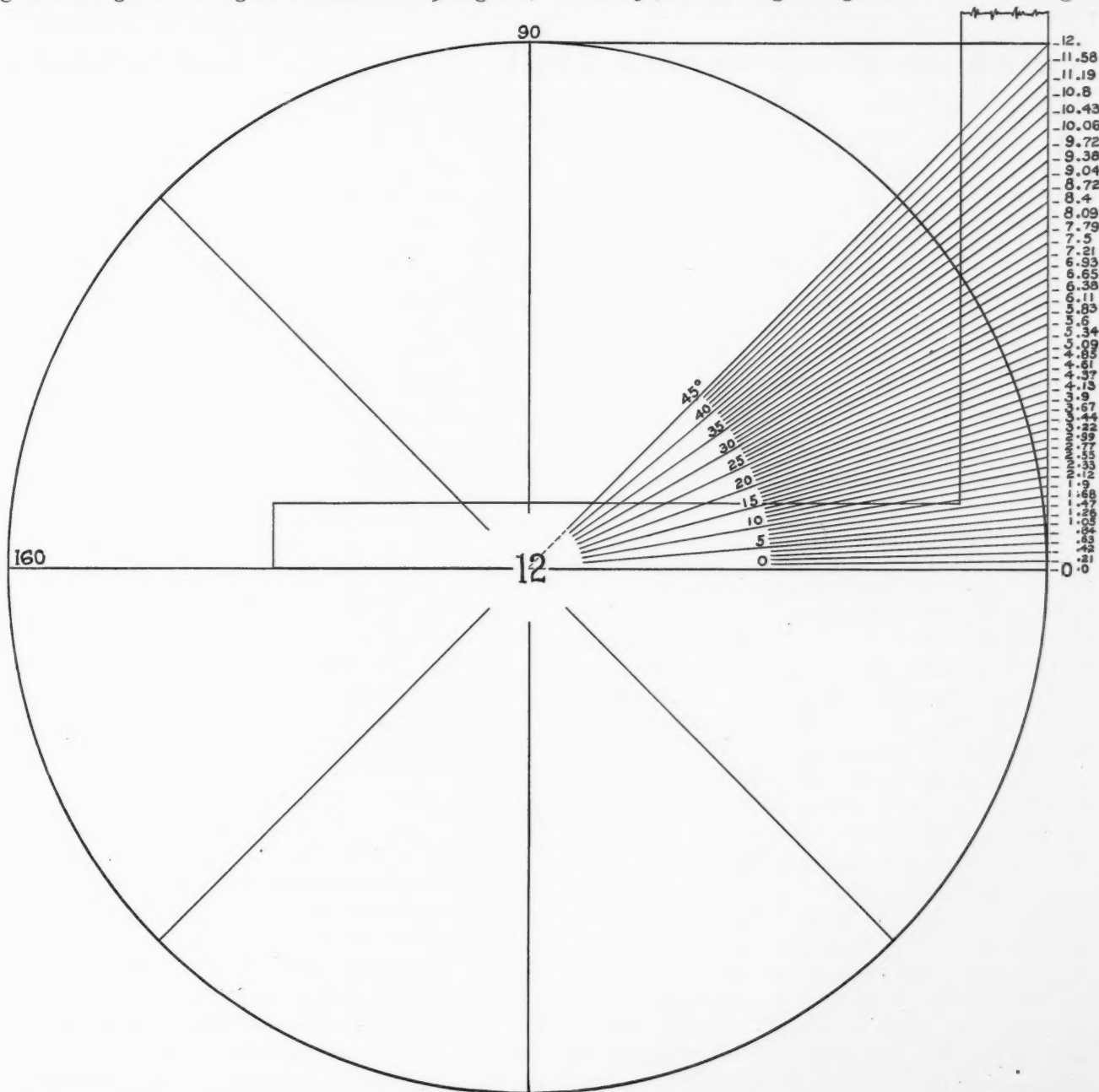


Fig. 3. Table of Tangents in Connection with Steel Square.

side of the square instead of the blade, as in the case of the latter.

To illustrate this point further, we will take 30 and 60 degrees. These represent the angles to take on the square for the hexagon and triangle respectively, and in Fig. 1, both the tangent and co-tangent are shown and, as it happens in this case, that the degree and its complement both represent angles that give the miter for regular polygons, either equare will give the angle for the miter for either the hexagon or triangle by simply reversing the cuts on the square.

In Fig. 2 is shown a proof of this by applying the squares to a straight line, and it will be seen that the blade and tongue coincide with each other.

Now, we are aware that some may wonder what all this has to do with roof framing in general and what

good is it anyway. To such, will say that it has all to do with it, and that when the principle is once mastered, the whole subject of obtaining angles with the aid of the steel square is mastered. But we shall not go further at this time.

Next month we will take up where we leave off now. So far we have only laid the foundation upon which to build. We leave it to the student reader to think about it until we come again.

NOTE.—In our last article, we sought to correct an oversight on our part in a previous article, where we carelessly omitted the figure 1 in front of 63 7/11, but when it came out in the last number, the printer's devil, or someone else made it read 167 7/11. We regret to call attention to this again, but feel that it is due all concerned to make correction as far as possible.

Valuable Discoveries Made by Forest Laboratory

THE experimental work carried on at the Forest Products Laboratory, maintained by the Forest Service of the U. S. Department of Agriculture in co-operation with the University of Wisconsin, at Madison, Wis., gave results during the past year which, like the results of previous years, have a direct interest for the various industries which depend upon wood in some form for their raw material. To benefit both these industries and the consumers of their products by bringing about a better and more economical use of wood in all its forms is the object of the Laboratory's experiments.

A New Classification for Southern Pines

As one result of the Laboratory's tests on American woods, more than 130,000 of which have been made on 113 species, a classification of the southern pines, based upon the density of the wood, was developed by the Laboratory, and has proved a very good criterion of quality. Aside from the matter of defects, the strength of timber is proportional to the dry weight of the wood, that is, the heavier the wood, the greater its strength, stiffness, toughness, etc. In the southern pines the relative dry weight of various pieces may be judged by comparing the proportion of summer-wood—the darker, hard portion of the annual rings—in their cross sections; and it is this which serves as the basis for the density classification. This density classification has been adopted by the American Society for Testing Materials as part of their standard specifications for yellow pine bridge timbers, and, combined with specifications as to defects also based on results of Laboratory tests, has been put in use by the Southern Pine Association to define a special grade of timbers known as "select structural." General rules embodying the same principles were incorporated in the building code recommended by the National Board of Fire Underwriters as standard practice.

Dry Kiln Experiments

Several years ago a humidity-regulated kiln, in

which a number of the more refractory woods can be dried successfully, was patented by a member of the Laboratory staff, and the patent dedicated to the public. During the year just past the work in connection with this experimental kiln aimed chiefly toward a reduction of the time required for drying, particularly in the case of wood green from the saw. White fir, Alaska cedar, incense cedar, and Douglas fir were the woods used. Green white fir was successfully kiln-dried in 43 hours.

An unusual and uneven shrinkage in certain western woods, red cedar among others, was found to be due to collapse or breaking down of the cells during drying. After this discovery it was possible to apply a remedy which entirely overcomes the trouble. For red cedar the solution of the problem is to keep the temperature below 135° or 140° so long as the cell walls are wet. Redwood exhibits a similar tendency to collapse in drying, and it is probable that this occurs in a lesser degree in nearly all woods.

Improvements which simplify its construction and increase its efficiency were made in the Forest Service kiln. The year saw kilns of this type constructed by one of the eastern railroads and by two lumber companies.

The cause of casehardening and the condition of casehardened wood were studied.

Microscopic Structure of Commercial Woods

A method in advance of any previously used for distinguishing the woods of longleaf, shortleaf, and loblolly pine was developed by the Laboratory. Differences in size of the pith and of the second annual ring of growth in the three woods form the chief basis for the method of identification.

The Laboratory's collection of photomicrographs was increased by 75 views. The great demand for these prints has exceeded the Laboratory's ability to furnish them.

Sap Stain

The loss to lumber manufacturers caused by sap stain is estimated to be \$7,000,000 annually. The Laboratory has discovered that in treating lumber to prevent sap stain, sodium fluoride gives results far superior to those obtained by the soda dipping process. Tests made in co-operation with lumber companies showed that in solutions of equal strength sodium fluoride is at least twice as effective as sodium bicarbonate. Besides preventing stain, sodium fluoride tends to protect the wood against decay-producing fungi.

Creosoted Wood in Silos

Investigation by the Laboratory has shown that creosoted wood can be used in silos without contaminating the ensilage. This fact is important to lumber manufacturers, since silos furnish a promising field for the utilization of certain kinds of timber.

Fireproofing Tests

An experimental fire house was constructed at the Laboratory, in which it is possible to duplicate conditions existing in modern offices. Several test fires were built in this house and the results promise to yield valuable data regarding the extent to which wood constitutes a fire hazard in modern buildings. Fire tests were made of 18 commercial paints designed for exterior use, of which only 5 proved to have fire-retarding properties. Unpainted test pieces used for comparison resisted ignition 43 seconds, while the 5 pieces just referred to resisted for periods varying from 1 minute 3 seconds to 2 minutes 10 seconds. Four interior paints tested gave good results in comparison with untreated wood. Patents were applied for, to be dedicated to the public, on a new fireproofing compound developed by the Laboratory.

Relative Resistance on Untreated Wood to Decay

About 70 species of hardwoods and 40 species of conifers were tested to determine their relative resistance to decay. Tests were made both in a specially constructed fungus pit and in culture jars. The pit tests are not yet completed, but the jar tests showed that the sapwood of all conifers, except western red cedar, western juniper, California juniper, and arborvitae, lost 60 per cent or more in weight during 12 months. Eastern arborvitae proved the most durable of the conifers, losing only 7.7 per cent of weight. The heartwood of all spruces, hemlocks, firs, and lodgepole pine also lost more than 60 per cent in weight. The resinous hard pines varied widely, the loss in weight ranging from 17 to 58 per cent. Eastern arborvitae, western red cedar, western juniper, Port Orford cedar, and California bigtree proved highly durable, the junipers and arborvitae particularly so.

Investigations to determine the effect of resin in wood upon its durability made definite progress, and indications are that the results will conflict with prevailing opinions.

Fungicidal Properties of Wood Preservatives

About 1,900 tests on the toxic properties of wood preservatives were made during the year. The majority of substances tested were coal tar and water-gas-tar distillates. Considerable variation was found to exist between different samples of the same substance, showing the need for standardization of the products.

Studies of the ability of fungi gradually to increase their resistance to toxic agents yielded some interesting results. It was found that a one per cent concentration of a certain wood preservative is sufficient to kill *Fomes annosus* when the fungus is taken from a culture grown on a preservative-free media; but that when grown through four generations on gradually increasing concentrations of the preservative, a 3 per cent concentration is required to kill it.

Lumber Yard Sanitation

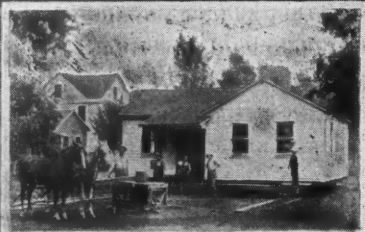
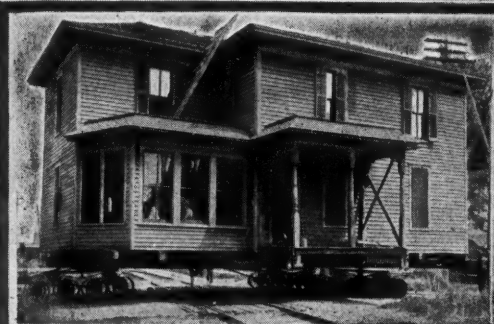
Further field studies were made of conditions in lumber yards to determine the extent and cause of the decay existing in stored timber and the relation of this to outbreaks of rot in buildings. These studies show that an exceedingly bad condition exists in many lumber yards in respect to the sanitary handling of timber. The majority of dealers do not realize the full danger in supplying infected stock to the building trades, and take few precautions to maintain their material in sound condition. The "house fungus" (*Merulius lachrymas*) of Europe was found widely distributed in lumber yards in the eastern United States. Since the same fungus is often found in buildings in the same localities, it is probable that it is introduced in infected building material. It is hoped that through these investigations of the Laboratory the lumber dealers of the United States will give greater attention to keeping their yards in sanitary condition.

Production of Low Grades and Waste

A great amount of information showing the extent to which low grade lumber and wood waste are produced in the United States, and the extent to which they are being utilized, was collected by the Laboratory for incorporation in a report on the lumber industry to be made by the Forest Service. For the same report there was compiled the most comprehensive data yet secured on the extent to which substitutes for woods are being employed.

Value of Lumber from Turpentine Trees

Mill scale studies to determine the effect of two years' turpentine by the cup and gutter system on the quantity and quality of lumber produced by the cupped trees were completed. These tests, involving an exhaustive study of 164,000 board feet of lumber, show that turpentine trees produce lumber ranging only from one-half of one per cent to one per cent less in value than that of unbled trees—an insignificant depreciation. No difference was found in the quantity of lumber produced.

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| <h1>MODERN HOUSE MOVING METHODS</h1> <p>For the Carpenter and Builder</p> | | |
|  <p>The Old Way</p> | <p>By E. W. LaPlant PRESIDENT OF THE La Plant-Choate Mfg. Co.</p> |  <p>The New Way</p> |

Removing a Brick Smoke Stack

CHAPTER FIVE OF MOVING METHODS SERIES—HANDLING SAFELY A TYPE OF CONTRACT THAT OFTEN PRESENTS ITSELF.

IN this article I will deal with the wrecking of a brick smoke stack. A great many contractors thruout the country every once in a while have this problem come up before them. Some of these stacks are left after a fire has destroyed a building and the stack is condemned and must be wrecked.

There are a good many ways in which to go after this particular work, but I am going to describe a specific way in which I went after this particular job.

This brick smoke stack was at the Quaker Oats

plant. The building caught on fire and was very badly damaged and the stack was condemned. It had to be removed and the only way it could be thrown was on a straight line or path on account of hoisting engines, and the streets being within 100 feet—and also a row of houses being within 100 feet adjoining the street.

The five-story brick building was built up and adjoining the stack; and it was necessary to cut loose from this before making the throw.

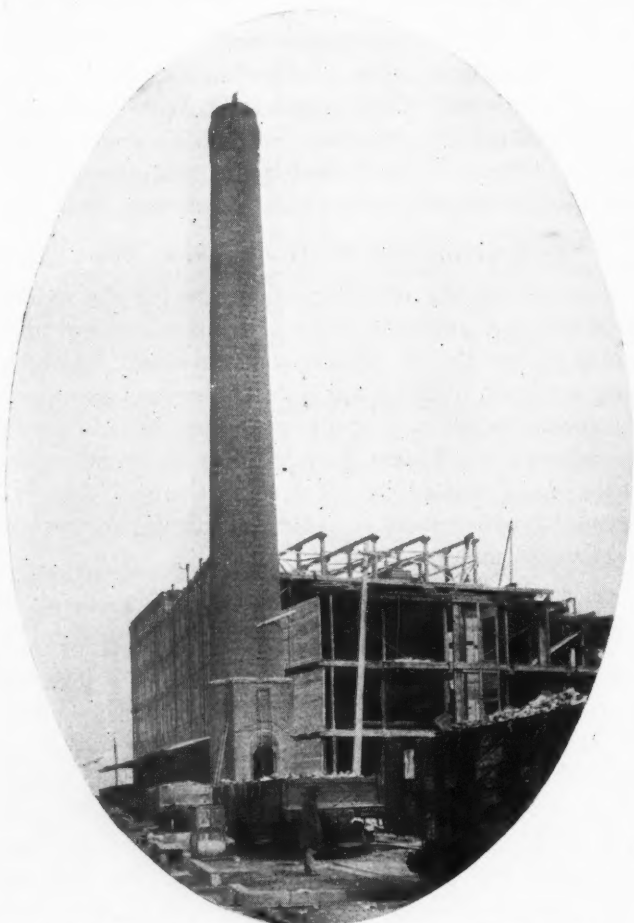


Fig. 1. Brick Stack at Quaker Oats Plant that Had to be Removed Following a Fire.



Fig. 2. Back Cut Away and Filled with Jacks.

The stack had three-foot brick walls at the base; the base diameter was 90 feet, and the height of stack was 165 feet.

On account of the limited space in which to throw the side away from which I wished to throw, the same to throw it on the right spot without any damage to adjacent property and machinery.

I first cut out one-third of the stack at the base, on the side away from which I wished to throw, the same as a wood chopper cuts a tree. The cut out I filled with jacks, so that I did not lose any strain and held

same so that it would not shear.

Figure 1 shows a good, clear-cut view of the stack and the condition in which I had to throw it. Figure 2 shows the jacks that I set at the rear side of the stack. Before we started to pull we wound up on these jacks a little bit to get a strain on the off side. Figure 3 shows the side to which the stack fell, where I had cut out bricks and also shored up between near the line of break with jacks and timbers.

It was necessary to oscillate or tip the stack at a certain angle so that the fall would be correct. I put in steel beams crosswise at the base of the stack, where I cut in to carry the weight of the stack while oscillating to throw it in the proper direction. I took two



Fig. 3. Front of Chimney Partly Cut Away.

fir timbers 14 by 16, 60 foot long, and battered them up on each side of the stack, cutting a hole in the stack about 50 feet above the ground level so as to brace these timbers. The reason I did this was to steady the stack and make it fall absolutely in the direction in which I wished it to go. The timbers were held out about 14 feet at the base to give them plenty of leverage.

I then sent a man to the top of the stack and had him attach a wire cable, which was then brought down from that point to within 50 feet of the top in four separate hitches. Then we took these lines that were down at the ground and connected them up with the portable capstan about 800 feet away.

There was a New York and also Chicago engineer on the job, working for the Quaker Oats Company, at the time I wrecked this stack; and they made a bet with me that the stack would double up, and that I would not be able to throw it over 150 feet from the base. We made the bet, and I bet that I could throw it at least 155 feet from the base. After the stack was thrown it measured exactly 158 feet—this was all due to the fact that the throw and the cantilever were positive and got the full benefit of the entire falling of the stack, with the exception of a few feet.

Figure 4 shows the stack falling. The dark mass

at the top is the soot and part of the top plates of the chimney falling, but the main part, you will note, is going over in nice shape.

There is another and easier way of handling this job of wrecking a chimney, where the ground and the space are not quite so limited. That is to cut in at the base of the stack, on the side to which you wish to throw same, and crib it up good with blocking, keying up just as fast as you cut out, using 12 by 12-inch blocking and tapering same with oak wedges with steel plates above them; and after all is in and everything is keyed up and one-half of the stack is cut out, you will have a solid mass of blocking. Then pour kerosene on the blocking, touch a match to it, and in a surprising short space of time the blocking will all be burned out and then the chimney will topple over. The blocking burns very fast on account of the draught of the flue. It only takes a matter of five or ten minutes until this blocking is all burned out and the chimney falls. This makes a very cheap way of handling a deal of this sort, and will certainly throw a chimney in quick order.

In my next article I will deal with the shoring of an ell-shaped building, under which the owner wished to place a foundation and cellar. This problem is a real one from a man located at St. Louis. It is a problem that comes up every once in a while, and I am sure that the answer and drawings will be of interest to the readers.

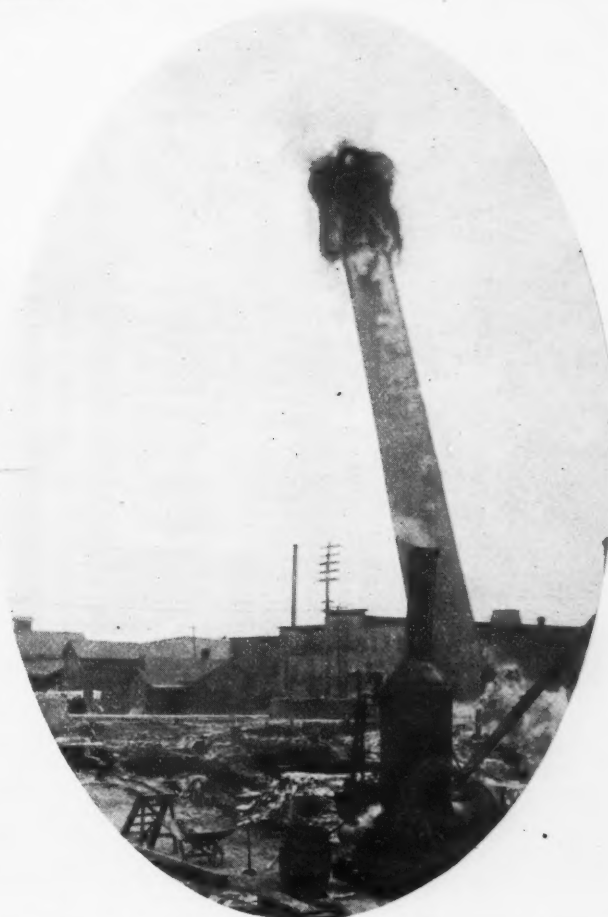
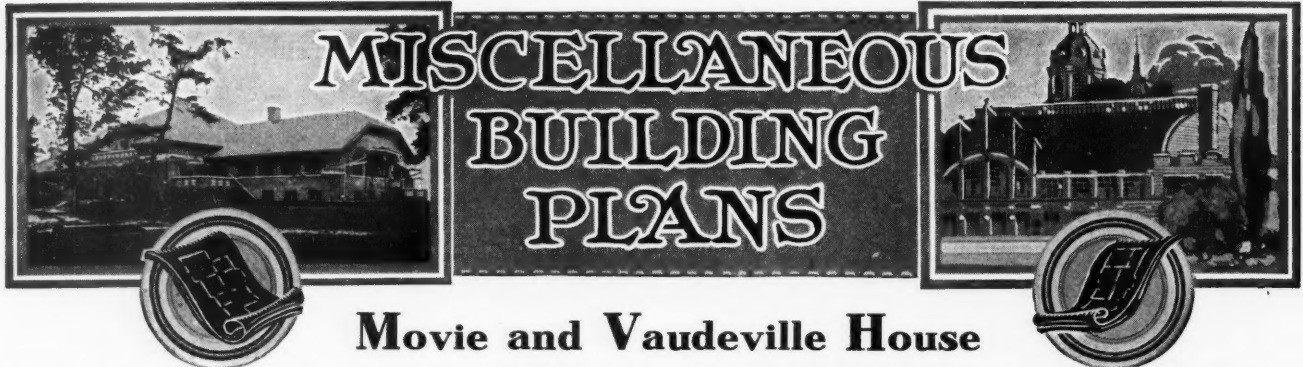


Fig. 4. Over She Goes—A Clean Fall of 158 Feet.



EIGHTH OF A SERIES OF PUBLIC AND COMMERCIAL BUILDINGS—IDEAS FOR A SHOW HOUSE OF POPULAR SIZE THAT WILL DRAW THE BEST PEOPLE

THE day of the store show, that is, of the small movie located in a re-modeled store space, is practically past. The moving picture business has out-grown that. It is requiring much larger seating capacities to hold the ever-growing number of moving picture fans.

This being the case, we find a rather active and urgent building situation in connection with the design and construction of moving picture theaters. The managers have learned that the people prefer to go to the new, brightly lighted and well ventilated places, and that such seldom lack for patronage.

The design illustrated herewith is for a combination

moving picture and vaudeville theater to seat 511 in opera chairs. The building has a frontage of 40 feet and runs back from the street 126 feet. The front is architecturally pleasing, a strong contrasty effect that attracts attention and brings business. It is a front that would be a real addition to any business street. Dark colored face brick, white terra cotta trim, and a liberal amount of plate glass are the materials used.

The operator's room is located above the lobby. It is of fireproof construction, having floor and ceiling of reinforced concrete and walls of 6-inch terra cotta tile. Fireproof steel doors shut it off from two storage rooms which are also located on this mezzanine floor.



Modern Small Theater for Moving Pictures and Vaudeville. Size, 40x126 feet. Front is Constructed of Dark Brick with White Terra Cotta Trim, Making a Striking Effect. Design No. 6816.

A slope of 5 feet in 87 is given to the auditorium floor so that the line of sight of every spectator is unobstructed.

Ventilation is very important in a moving picture theater, more so than in any other type of amusement hall or public building. This building has three galvanized iron roof ventilators which carry off the warm bad air as it rises through the eight grille openings in the ceiling.

Since this building is planned for both moving pictures and vaudeville, there is a commodious stage with a dressing room at each side. Where the vaudeville feature is not desired, the building could be cut off just back of the orchestra pit and finished with a plaster screen.

Note that four exits are provided in addition to the two main entrance doors. All of these doors, of course, swing out.



Motor Trucks Cover More Ground

"NOT only in the large cities but in the small towns motor truck delivery is accomplishing wonders through its ability to cover more ground than horses," says Sales Manager G. C. Frey of the Kissel Motor Car Company.

"The Hudson Doughty Lumber Co., of Newton, Kan., says that truck haulage has increased its zone of trade 15 miles in each direction.

"Henry C. Snowden, hardware dealer of Media, Pa., states he is covering with his truck 50 per cent more territory than when he used horses. Frank E. Merrill, a box manufacturer of Turner, Me., often makes forty mile cross-country deliveries where he formerly used the railroads. Dozens of similar cases could be cited where trucks are not merely replacing horses but performing entirely new duties."

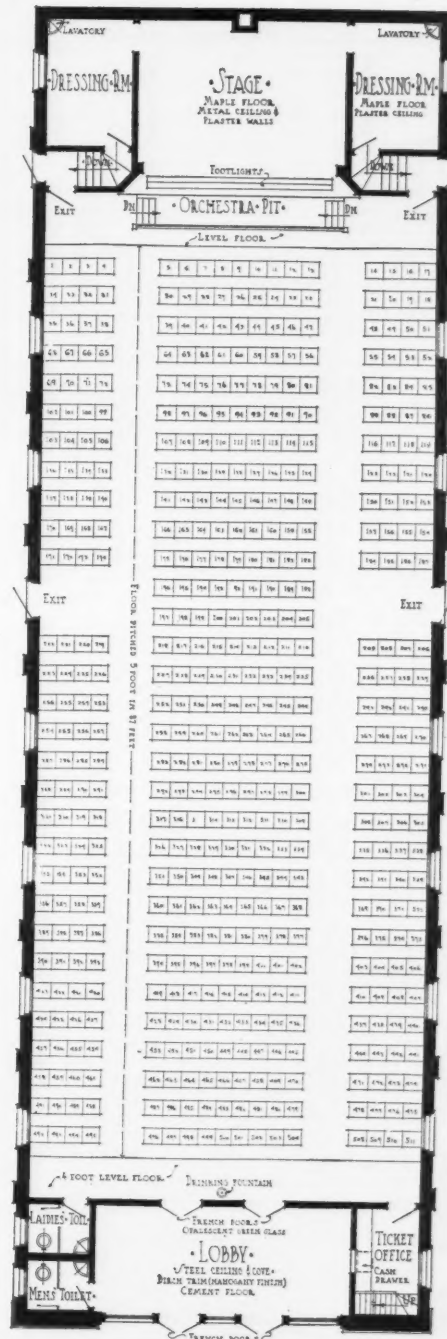


Courage Warmers Needed

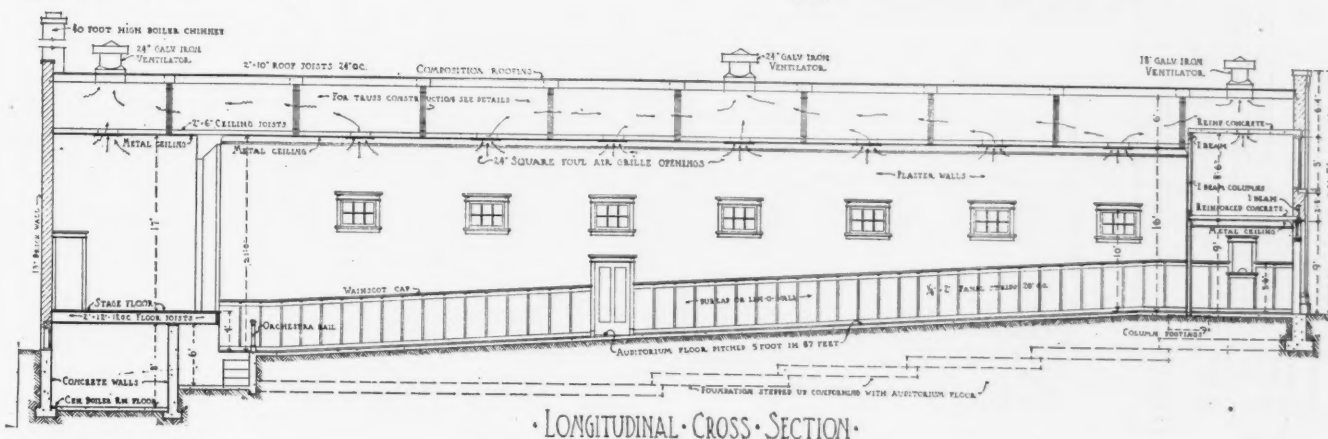
A girl was complaining to her chum of the way her "young man" was treating her.

"Speaking of presents, why don't you give him the mitten?" the friend asked.

"It isn't a mitten he needs, it's a pair of woolen socks; he's got cold feet."

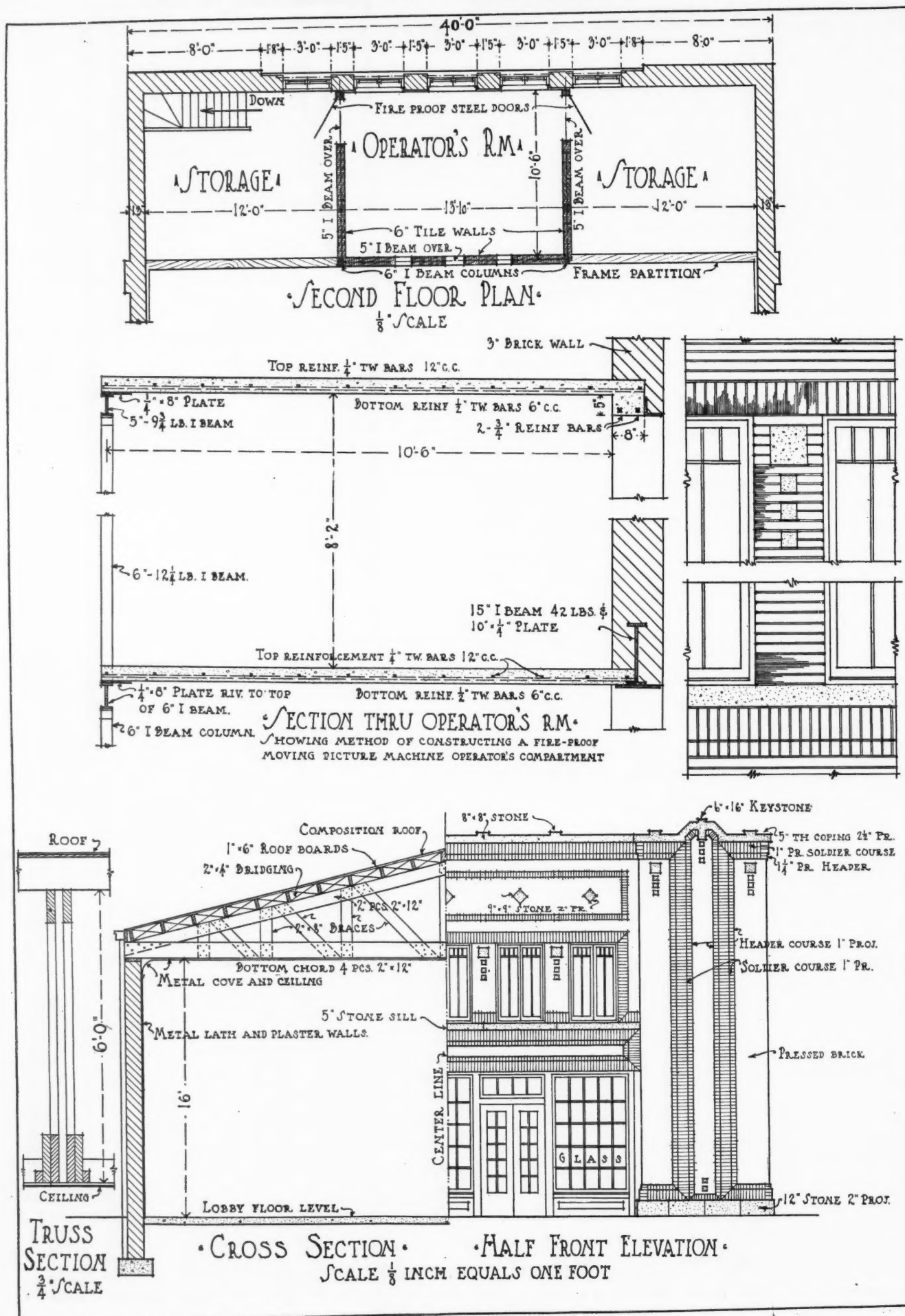


Floor Plan of Theatre Providing 511 Seats. If Constructed for Motion Pictures Only, the Stage and Dressing Rooms Would be Left Out.



LONGITUDINAL CROSS SECTION.

Longitudinal Section Thru Theatre, showing 5-Foot Drop in Floor from the Entrance Doors to the Stage. Operator's Booth for Lantern is Above the Lobby.



Details of Construction of One-Story Theatre, Design No. 6816, Illustrated on Page 64. An Up-to-Date Business Attracting Front is Provided and the Operator's Room is of Fireproof Construction.



Noon Hour Talks by the Boss Carpenter

Talk No. 47. Cantilever Beams

New Series No. 4

THE BOSS TELLS ABOUT CANTILEVER BEAMS UNDER DIFFERENT KINDS OF LOADING AND SOLVES PROBLEMS.

“THE beams that we have been handling in the last three talks,” said the Boss, “were freely supported at each end and could move on the supports if necessary. Later we will consider the same kind of beams with the ends fastened down at the supports in such a manner that they cannot tip up as in the illustrations of the previous cases.

“Today, I am going to show you a beam which is supported at one end only. This type of beam is usually referred to as a cantilever, or cantilever beam. Not only are beams of this kind used as shown in the illustrations of this talk, but also in connection with other parts of a structural member. For instance, if a long loaded beam is supported at two points not located at the extreme ends, that part of the length of the member which projects beyond the supports is in the same condition as the cases shown here. Simple cases of cantilevers are met where short beams project from a wall and support a balcony, or are used for hoisting purposes. If slanting braces are used extending between the end of the cantilever and the supporting wall, these cases do not apply, since the brace forms a support for the free end of the cantilever.

“With cantilevers, as with simple beams, calculations should be made on the basis of strength in bending, horizontal shear, and for the maximum deflection. We will consider each of these conditions in the problems which follow.

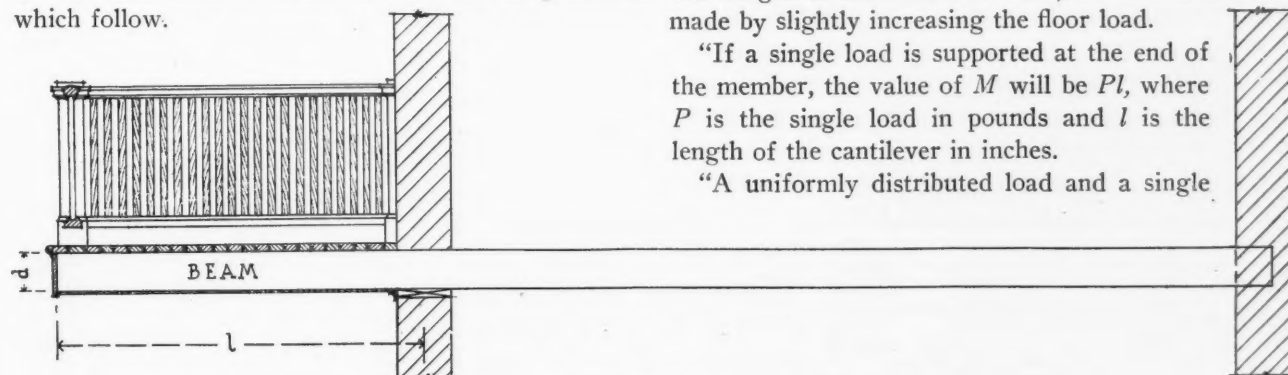


Fig. 4A. Cantilever Beam with a Uniformly Distributed Load.

“The loading will be taken as uniformly distributed in the case of a projecting balcony supporting a floor, or as concentrated at the end, as in the case of a member used to support a post or load at the end, as in hoisting. A combination of the two cases will be shown to illustrate the general principle of design.

“In the calculation for strength we will use the

general beam formula $\frac{pl}{e} = M$, which we considered

in Talk No. 44. The value of M at the wall will vary with the loading in this case, as in previous cases. If the cantilever bears a uniformly distributed load, the maximum M will equal $\frac{1}{2}Wl$, where W is the total load on the cantilever in pounds, and l is the length of the member in inches. The value of W may be found by multiplying the length of the cantilever in feet by the load per foot of length, or if the member is one of a number equally spaced along a wall, each cantilever will carry a weight equal to that on the floor area supported by that cantilever. This area is found by multiplying the length of the cantilever in feet by the distance between centers of cantilevers in feet. The area in square feet multiplied by the load on the floor in pounds per square foot will give the total load on the member, or W . If it is desired to take into account the weight of the floor and beam, an allowance can be made by slightly increasing the floor load.

“If a single load is supported at the end of the member, the value of M will be Pl , where P is the single load in pounds and l is the length of the cantilever in inches.

“A uniformly distributed load and a single

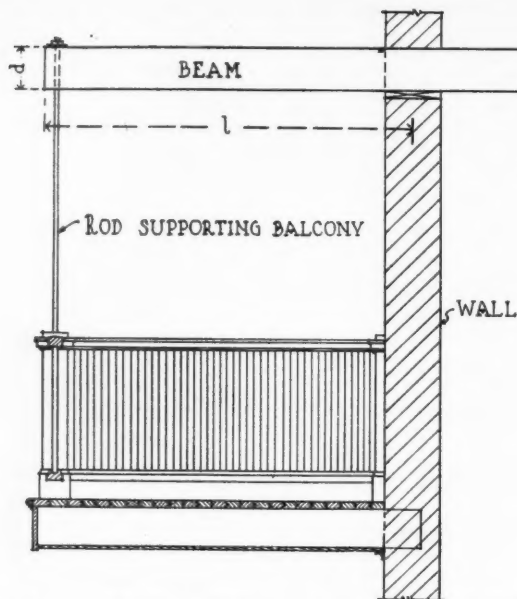


Fig. 4B. Cantilever Beam with a Single Load at End.

load at the end will give a value of the maximum M equal to the sum of the two values given above, or

$$\frac{Wl}{2} + Pl.$$

"We will take a case similar to Fig. 4A, in which a series of timber cantilevers 4 feet long and spaced 6 feet on centers support a floor. Assume that a unit bending stress of 1,200 pounds per square inch is to be used for the strength of the timber, and find the amount of uniformly distributed load that could be held by this platform with safety. We will assume that the timbers are 6 inches by 8 inches, and that they

run full size. Since the unit loading is the unknown quantity in this case, we will have to use our value of $M = \frac{1}{2}Wl$, with only the value of l expressed as a number. We know that $p = 1,200$ from WALL the problem; also that

$$I = \frac{1}{12} \times b \times d \times d \times d = \frac{1}{12} \times 6 \times 8 \times 8 \times 8$$

8×8 from our previous talks. The value of e will be 4 inches, as explained in Talk No. 44.

"Filling these values into our general beam formula,

$$\frac{pl}{e} = M, \text{ we have } \frac{1,200 \times l/12 \times 6 \times 8 \times 8 \times 8}{4} = \frac{1}{2} \times W \times 4 \times 12.$$

Solving, $W = 3,200$ pounds.

Since each of these cantilevers will have to support an area of 6 by 4, or 24 square feet, of floor, the allowable load per square foot of floor will be $\frac{3,200}{24}$, or

133 pounds.

"To examine this cantilever for safety in regard to horizontal shear, we will use formula (3a) of Talk No. 46. In the problem above, S will be equal to the entire load on the cantilever, since it has but one wall support. The other values needed to solve formula (3a) will be as described in Talk No. 46. Filling in formula (3a), we have

$$s = \frac{3,200}{1/12 \times 6 \times 8 \times 8 \times 8 \times 6} \times 24 \times 2 = 100 \text{ lbs. per sq. in.}$$

By an inspection of the table given in Talk No. 46, it will be seen that this value is within the limits of safety for any of the species of timber given there.

"To find the maximum deflection in one of these cantilevers, we must use the formula

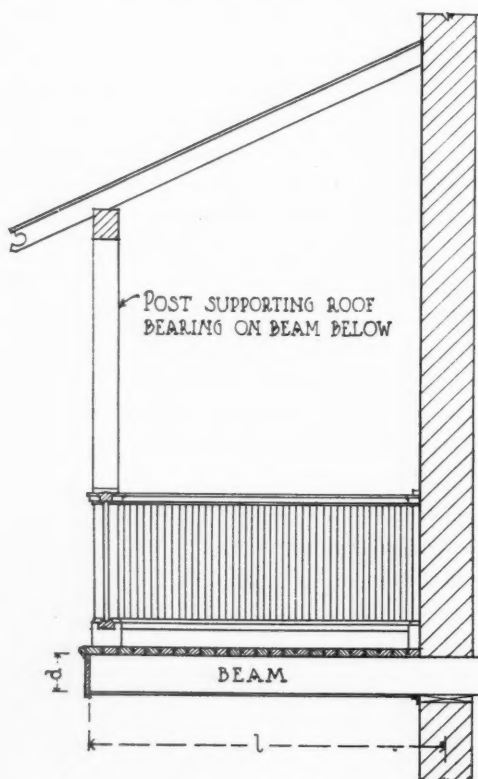


Fig. 4C. Cantilever with a Combination of Uniform Load and Concentrated Load.

$$D = \frac{1}{8} \frac{Wl^3}{EI} \dots \dots \dots (4a)$$

The letters in this formula have the same meaning as explained in connection with the formulas for deflection given in Talk No. 45. If the material used is long-leaf yellow pine, Table II gives a value of E equal to 1,500,000 pounds per square inch.

"Filling in formula 4a, we have

$$D = \frac{1}{8} \frac{3,200 \times 4 \times 12 \times 4 \times 12 \times 4 \times 12}{1,500,000 \times 1/12 \times 6 \times 8 \times 8 \times 8} = .12 \text{ inch.}$$

Since this value is less than $1/8$ -inch, the deflection would not be a serious matter.

"For the next problem, we will find the amount of load that could be carried at the end of a 6-inch by 6-inch timber projecting 3 feet from the wall of a building. We will assume that the allowable unit bending stress for this timber is 1,000 lbs. per sq. in. The value of M to be used in the general beam formula for this case will be Pl , and we will solve for the load P as in the previous case.

"Filling in the general beam formula, we have in this instance

$$\frac{1,000 \times 1/12 \times 6 \times 6 \times 6 \times 6}{3} = P \times 3 \times 12$$

Solving, $P = 1,000$ lbs.

"Testing this cantilever for the unit stress in horizontal shear, we find from formula (3a),

$$s = \frac{1,000}{1/12 \times 6 \times 6 \times 6 \times 6 \times 6} \times 18 \times 1\frac{1}{2} = 42 \text{ lbs. sq. in. (nearly).}$$

This value is seen to be safe by the values given in the table of shearing strengths in Talk No. 46.

"The maximum deflection in this case will be found by the formula,

$$D = \frac{1}{3} \frac{Pl^3}{EI}$$

Putting the proper values in this formula and solving, with $E = 1,200,000$,

$$D = \frac{1}{3} \frac{1,000 \times 3 \times 12 \times 3 \times 12 \times 3 \times 12}{1,200,000 \times 1/12 \times 6 \times 6 \times 6 \times 6} = .12 \text{ inch.}$$

By chance, this value of the deflection is the same as in the problem above, but there is no relation between the two cases. This value is also so small that there will be no trouble from the deflection.

"As a third problem, we will find the depth needed for a timber cantilever 8 inches wide and 5 feet long in order that it may carry a uniformly distributed load of 3,000 pounds, and a single load of 2,000 pounds on a post located at the end of the cantilever. We will

assume that this member projects from a solid wall of sufficient strength to hold it, and that the timber is long-leaf yellow pine having an allowable unit bending strength of 1,200 pounds per square inch.

"As stated above, the value of M in this case will be Pl .

From the general beam formula, we find,

$$\frac{Pl}{e} = \frac{Wl}{2} + Pl, \text{ or,}$$

$$\frac{1,200 \times 1/12 \times 8 \times d \times d \times d}{d} = \frac{3,000 \times 5 \times 12}{2} + 2,000 \times 5 \times 12.$$

Solving for $d \times d$, we find that

$$d \times d = 131.$$

The value of d which corresponds to the nearest commercial size of timber will be 12 inches, since $12 \times 12 = 144$, instead of 131. Therefore, we will use an 8-inch by 12-inch timber.

"If we test this cantilever for unit horizontal shear, using the sum of the two loads, or 5,000 pounds, as the value of S , we find

$$s = \frac{5,000}{1/2 \times 8 \times 12 \times 12 \times 12 \times 8 \times 48 \times 3} = 78 \text{ lbs. per sq. in. (nearly).}$$

This value is within the limits of safety.

"The total deflection in this cantilever will be equal to the sum of the deflections due to each of the loads, or

$$D = \frac{1}{8} \frac{3000 \times 5 \times 12 \times 5 \times 12 \times 5 \times 12}{1,500,000 \times 1/12 \times 8 \times 12 \times 12 \times 12} + \frac{1}{3} \frac{2,000 \times 5 \times 12 \times 5 \times 12 \times 5 \times 12}{1,500,000 \times 1/12 \times 8 \times 12 \times 12 \times 12} = .05 + .08 = .13 \text{ inch.}$$

Again, it is seen that the deflection is a very small quantity.

"Next time," said the Boss, "we will see how to figure the size of the posts or columns used to hold beams in place in a structure."



Slightly Damp

Mrs. Lovewett (2 a. m.)—"Where have you been?"

Lovewett—"Just fell in wiz an ol' frien', m'dear."

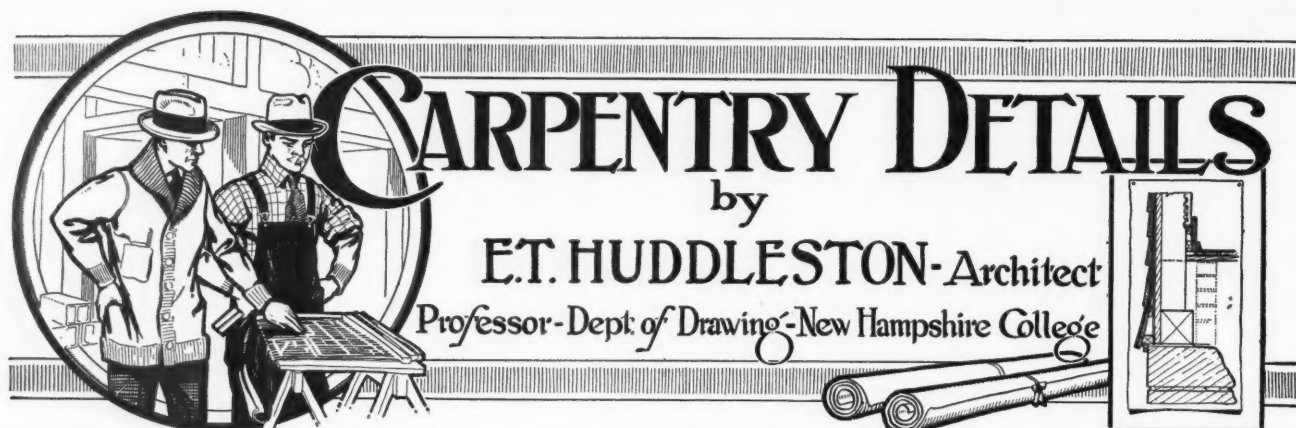
Mrs. Lovewett—"Fell in, eh? I believe you. You're soaked."



Early Morning Sounds

Suburban Resident—"It's simply fine to wake up in the morning and hear the leaves whispering outside your window."

City Man—"It's all right to hear the leaves whisper, but I never could stand hearing the grass mown."



Double Hung Windows in Brick Veneer Walls

THE THIRD OF A SERIES OF SIX ARTICLES WITH DETAIL DRAWINGS

IN general, the details of a box frame for windows in a brick veneer wall are the same or at least similar to those for windows in frame walls. The differences are not so much in the shape or size of the several members as in their connection to the wood frame and brick work. These differences are clearly shown in the details opposite as compared to those shown in the plate published in the May issue.

In planning a residence there is hardly any other single detail that has more to do with giving character and individuality to the building than the fenestration. Not only should the shape and size of the window openings be carefully studied to bring them into suitable proportion and harmony to the wall surface about them, but the frames and sash that fill the openings should be given equal care in design that the horizontal and vertical lines of the sash and mullions may be accented as conditions and taste require.

Where the window opening is broad and a heavy mullion is desired, the weights from the two windows may well be contained in the mullion. In that case, Sections B and D show details of the head and sill. Section B also shows the use of brick for the outside masonry sill, while Section D shows a stone slip sill.

In the head of Section D, note that the face of the yoke is 2 inches from the brick jamb. The outside casing is cut short to fit snug up against the iron lintel, as is also the outside stop, which is $1\frac{3}{8}$ by $1\frac{5}{8}$ inches. For the jamb, the lintel would be omitted and the outside casing would extend back equal to the ground casing as indicated by the dotted lines, the first stud being omitted, which would leave $2\frac{1}{2}$ inches for the box. The outside stop would then extend up to the brick work, making it $1\frac{3}{8}$ by 2 inches, or the face of the pulley stile would be set $1\frac{5}{8}$ inches from the brick jamb.

Where the window opening is too narrow to allow a box mullion, Sections A and C show details whereby the sash are hung from weights confined in the two side boxes which then permits of a narrow mullion, Section H. This detail will require overhead pul-

leys, which are readily obtained from different manufacturers of hardware. The head section of C makes allowance for these overhead pulleys by framing out a space equal to that allowed in the box for the weights. In other respects, the details for both types of windows are the same.

The sill section of C shows a stone lug sill and the best method of fastening the wood sill to it to insure a weather-tight joint. Into the stone sill 1 inch back from the outer edge of the wood sill a groove is cut $\frac{3}{4}$ inch deep by about $\frac{1}{2}$ inch wide at the top tapering to $\frac{3}{4}$ inch at the bottom. Into this groove a galvanized iron spline $\frac{1}{8}$ by 1 inch is securely cemented and let into the wood sill $\frac{1}{2}$ inch. This gives a very satisfactory sill construction and with the drips cut in the lower sash and the stone sill all chance of water getting into the frame is minimized.

Section H shows one way of forming a narrow mullion to go with the details of Sections A and C. The frame proper is made from $1\frac{3}{4}$ -inch material, which should be thoroly seasoned and kiln dried or there will be serious danger of it warping and causing the sash to bind. If the design will permit, the mullion may be widened $\frac{7}{8}$ inch and instead of being made in one piece, be built up of three pieces each $\frac{7}{8}$ inch. In that case the frame of Section H would be divided and a $\frac{7}{8}$ -inch piece or core inserted. This would give a very stiff construction and lessen any chance of its warping out of shape.

CORRECTION—I would like to call attention to an error in the last article. The last line of the fourth paragraph reads that the sash are but $\frac{1}{2}$ inch thick. This should have been $1\frac{1}{2}$ inch.

E. T. HUDDLESTON, Architect.

Durham, N. H.

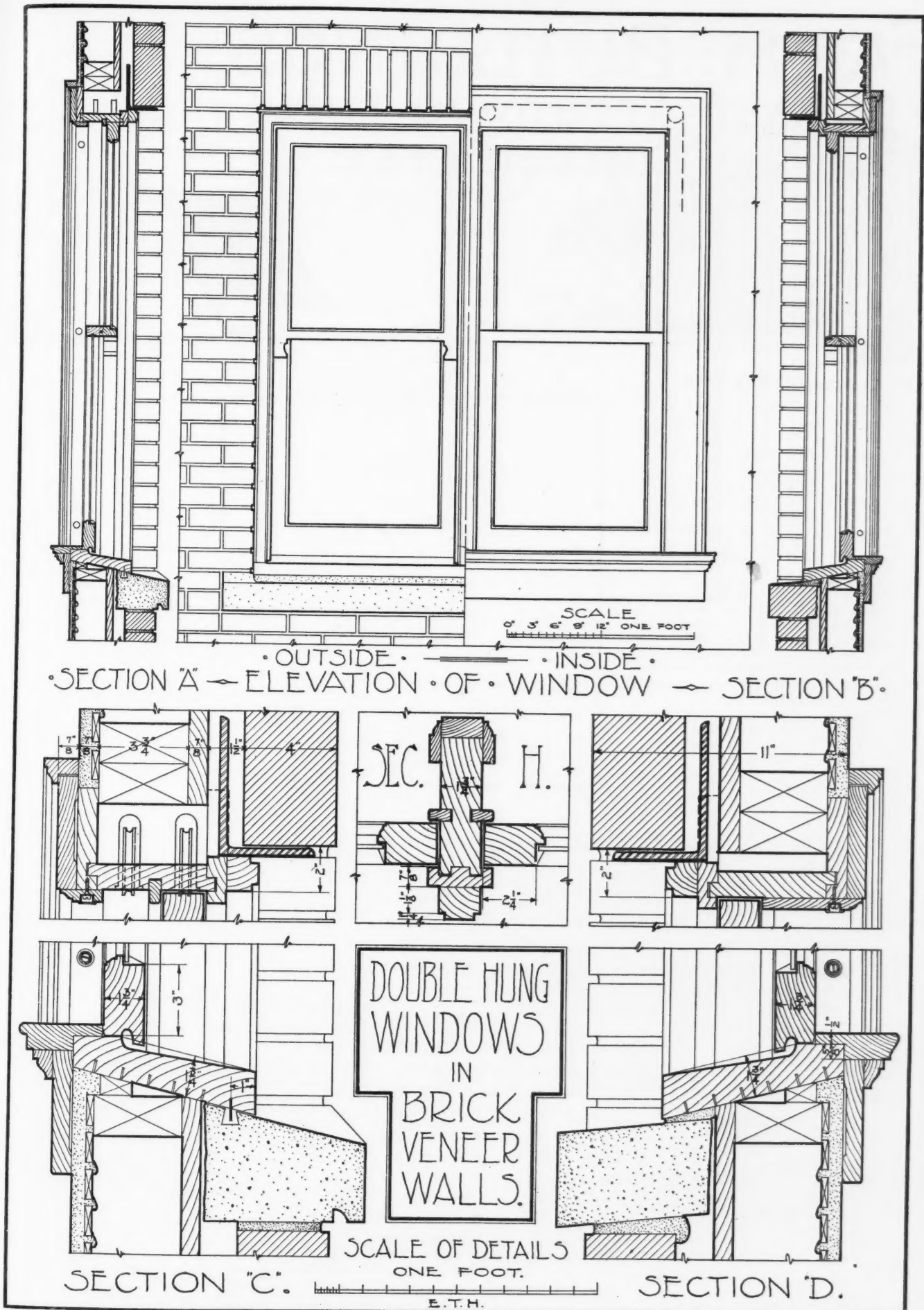


No Danger

She was very much in love with him, and one evening, while they were alone, she asked:

"Frank, tell me truly; you have kissed other girls, haven't you?"

"Yes," replied the young man, "but no one you know."



Details of Double Hung Windows in Brick Veneer Walls as Designed by E. T. Huddleston, Architect. Description and Explanation are on Page Opposite.

Economy Farm Barn

A combination farm barn and dairy stable is shown in Design A312. It was built for a farmer on a twenty acre farm near a good sized town. He keeps a herd of 16 pure bred and high grade Brown Swiss cows and has some young stock which is cared for in other buildings.

This particular barn was wanted for the cows giving milk and it is his intention to confine the actual milking force to the 16 stalls shown in the floor plan. Dry cows and other cattle have no place in the dairy proper. He wanted stabling in one end of the barn for work horses, which accounts for the two single stalls and one double stall in the horse end of the barn.

This double stall, by the way, is intended for a box stall when necessary, for either horses or cows. The two doors make it very convenient to use either way. The little girl claims this box stall for the use of her riding pony when it is not in use accommodating large horses or cows that the older people consider more important.

Careful work was done in the dairy end of this stable to provide the best accommodation possible for the milch cows. The cement floor, together with the mangers, gutters, etc., was very

carefully laid with a high grade mixture to make a permanent floor.

The cow stalls are 3 feet 3 inches in width, and 4 feet 8 inches in length from the manger curb to the gutter, which is large enough, because the stalls were measured to fit.

Good work also was done in building the silo and the feed room which connects the silo with the dairy stable feed alley. The silo chute and the hay chute both deliver into this little feed room between the silo and the stable, so that silage and hay are both handled in the most economical manner and without dumping directly into the stable.

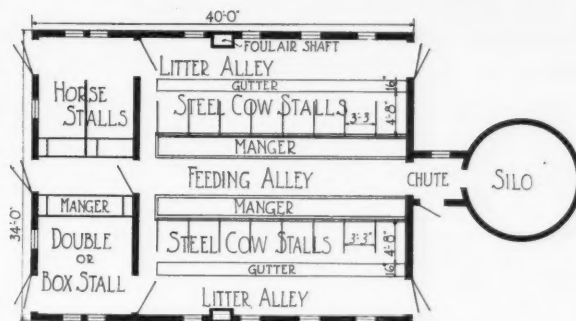
Builders of modern dairy stables make a strong feature of separating the feed room to keep out dust at feeding time

from the stable proper to prevent the introduction of objectionable bacteria thru the medium of floating dust.

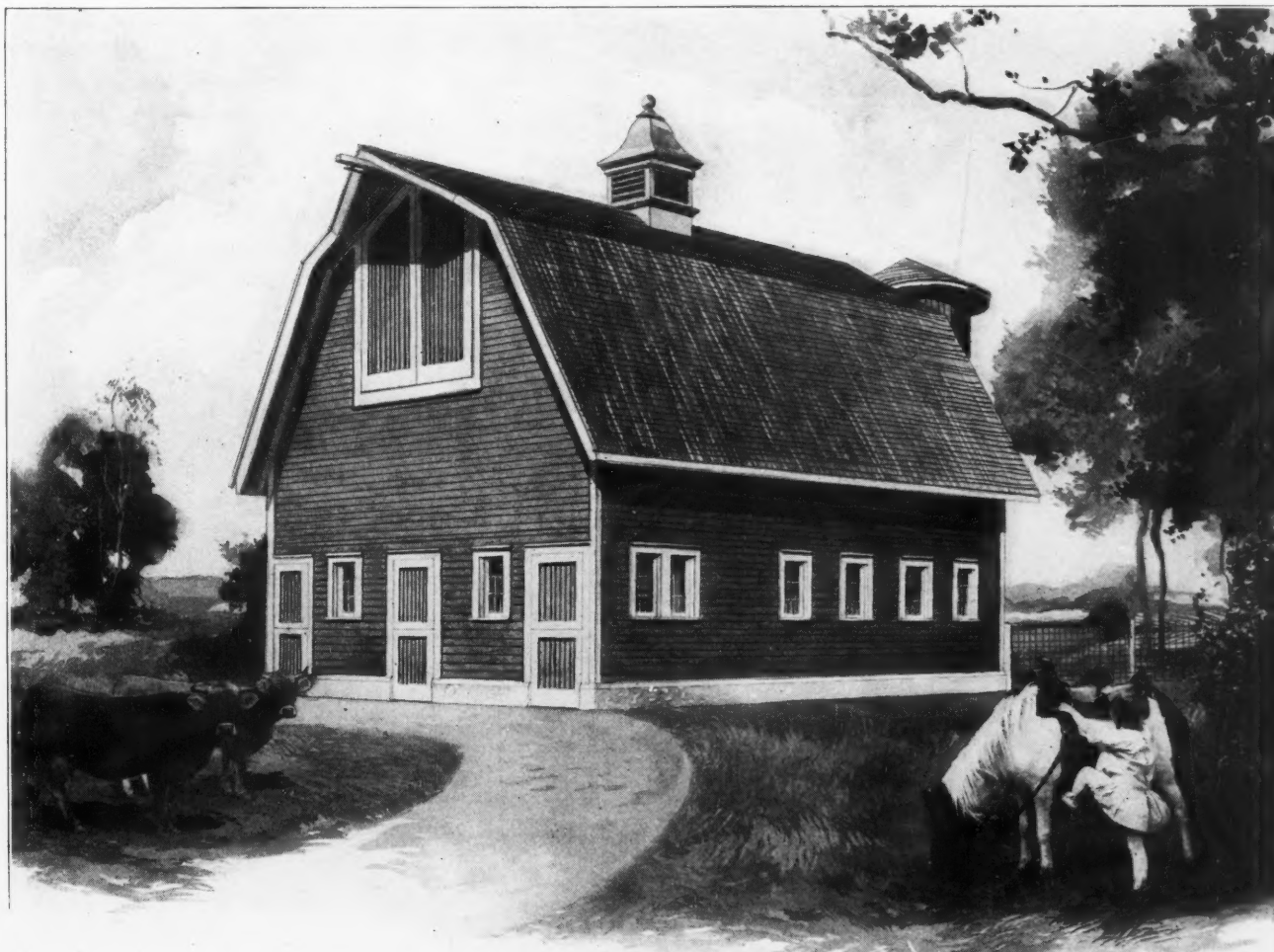
The inside of the cow stable is carefully finished to facilitate cleanliness. Every feature in the careful production of high grade milk and cream was considered in laying out the plant and in following up the details of construction with a view of carrying on a high grade dairy business.

The owner of these Brown Swiss has a select line of customers, who understand that he is particular, because he admits it in his advertisements. He says out loud that he is a crank on cleanliness, so that his customers are satisfied to pay him 2 cents a quart above the regular going price to get such a rich, high grade dairy product.

The ventilating system is part of the dairy equipment and an important part it is. The stable is built practically air tight. All the air that enters comes in thru the intake flues. Practically all the air that escapes goes out thru the ventilating flues, so that the intake and outtake of air means health to the cows, as well as cleanliness in every branch of the work. It is impossible to keep a stable clean when it is filled with foul, nasty air.



Floor Plan of Barn No. A312.



Economy farm barn to house 16 cows and 4 horses.

Big Gambrel Roof Hay Mow and Silo give plenty of feed storage space. We can furnish complete set of blue-printed working plans and typewritten specifications for only \$8.00 per set. When ordering, ask for Design No. A312.

Our Model Corn Crib and Granary

CUP ELEVATOR SHOULD BE PLANNED FOR AND BUILT IN WHEN TWO-STORY CRIB IS ERECTED—LABOR-
SAVING ADVANTAGES OF MODERN GRANARY EQUIPMENT WHICH EVERY
BUILDER SHOULD UNDERSTAND

DOUBLING the height of a double corn crib increases its capacity three times; because this rule doubles the size of the two corn cribs and adds grain bins between overhead.

The same foundation supports the building and the same roof covers it, and it is easier filled because the shoveling is done by proxy (gas engine or horse power).

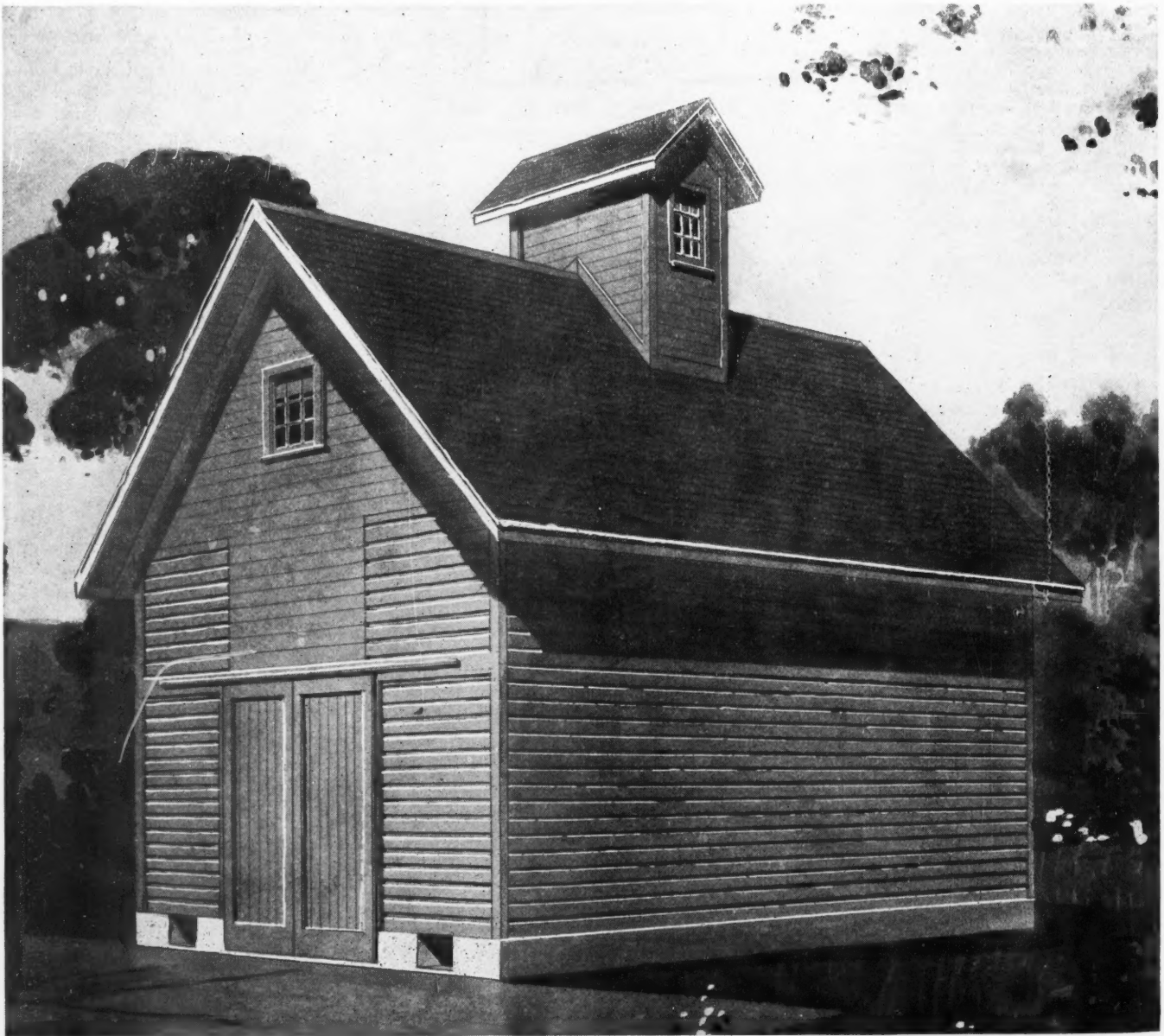
The new corn crib elevators will elevate a wagon load of small grain or ear corn from the elevator feeder or hopper to the storage bins overhead, or into either crib, in less than five minutes. And it is not necessary for the driver of the load to wait that long; for he can pull the tailboard, dump his load into the elevator hop-

per or feeder in about a minute, and hurry back to the field huskers or to the threshing machine to fetch another load.

This lightning speed unloading means a good deal to the farmer because this work comes on the busiest days of the whole year when hours count more than days at other times.

There are hundreds of farmers who raise three thousand bushels of corn each. Imagine what a nightmare one of those farmers has when he dreams about lifting that much grain over his head with a scoop shovel. And what a relief to wake up and see a gasoline engine doing the work.

Some farmers want to use the concrete center drive-

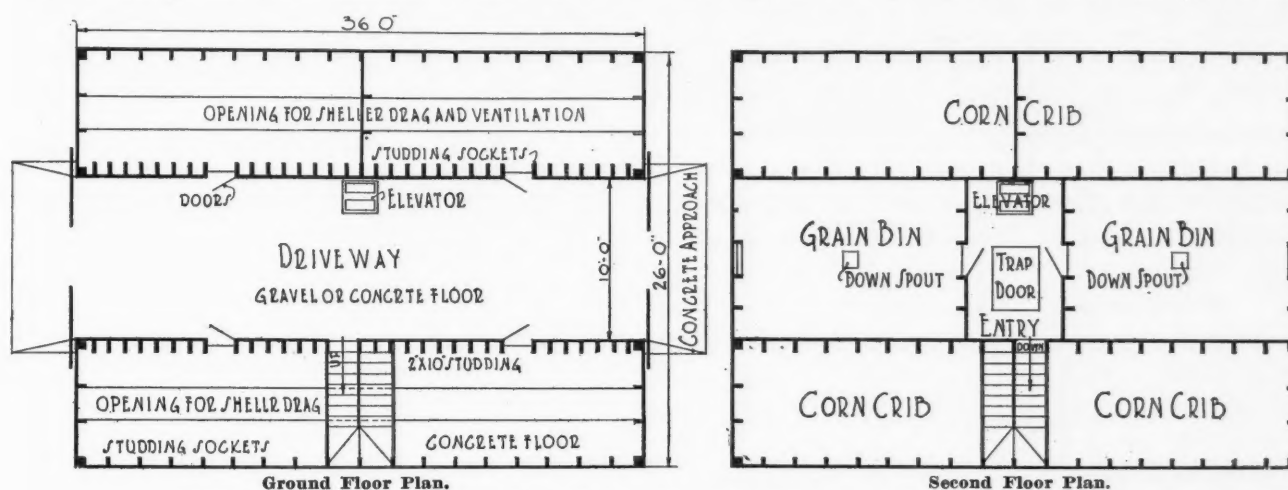


Architect's Perspective Drawing of Modern Two-Story Corn Crib and Granary (Design No. A363) Arranged to Use Power Cup Elevator.

way for a feeding floor after the harvesting, husking and threshing is done. It may be desirable in that case to make a smooth floor without a pit and to use a boot leg elevator with a hoisting jack to lift the front axle of the loaded wagon so the load will dump quickly.

The hoisting takes two minutes and it takes one min-

mesh inside of the studding and the corn is protected from storms by nailing 1 by 6-inch crib siding on the outside. These strips are spaced 1 inch apart. The driveway thru the center of the building is 10 feet wide and 12 feet high. Over the driveway there are three grain bins 10 feet in width, sided up to the



Arrangement of Two-Story Modern Corn Crib Shown on Opposite Page.

ute to lower away. It would be necessary to make the driveway 12 feet high when the front end of the wagon is to be raised high enough to dump the grain into a bootleg. But the floor may be used all winter as a clean, sanitary feeding floor with feed handy on both sides as well as overhead.

There are jaw clutches and friction clutches, speed jacks and worm screws to run fast or go slow so that any kind of adjustment may be made to any kind of elevator, to handle all sorts of grains in large or small quantities, and the outfit is permanent for use year after year.

So it has come to pass that the most popular new style farm building is the two-story corn crib with grain bins upstairs. When one such building is built in a neighborhood others are sure to follow because farmers are quick to adopt labor-saving buildings and quick-acting machinery. In this case it is a double saving because modern grain elevating machinery made these two-story corn cribs profitable by doing the shoveling for almost nothing, thereby saving nearly a cent a bushel on corn and practically the same amount on other grains. The saving on ratage is greater.

Our modern corn crib and granary, as shown by these illustrations, is rightly proportioned and constructed to store safely both ear corn and small grains to the best possible advantage in the least expensive way.

The building is 26 feet in width by 36 feet in length and it is 16 feet high to the plates. The corn cribs are 8 feet wide and because of the roof slopes they average about 22 feet in depth and they extend the whole length of both sides of the building. They hold about 4,300 bushels of corn.

The cribs are well ventilated by using corn wire

rafters. These bins hold 3,800 bushels of oats weighing about 121,600 pounds, or say 48 pounds on each square foot of bin floor surface. This weight is supported by 2 by 10-inch studding placed 12 inches apart on centers. The studs reach up from the wall sockets in the concrete foundation to the purlin plates, except in the center of the building where they extend on up to form the ends of the cupola.

The cupola is made large enough to accommodate the largest elevator head, and the height is sufficient to chute the ear corn, or small grains, to the furthest corners of the bins and cribs.



Water in Cellar

(Continued from page 37.)

stones, but the top should be filled with fine soil or clay. This should be put in while wet and should be solidly packed and rammed into place. The soil should be slightly higher near the wall than it is a few feet away.

There should be eave-troughs on the house so that all water from the roof will be carried away from the wall unless it is run into a cistern. It is this water from the roof which works down thru the wall and into the cellar.

In addition to the work on the outside of the cellar you may dig a trench around on the inside of the wall and perhaps one thru the middle. These should be filled with stones or have tile in them and should be connected with the drain outside.

You need a good cement floor, slanting toward some one point where there is a tile thru the wall to carry off any water which might get on top of the floor.

JOHN UPTON, La Fargeville, N. Y.

All School Rooms on Ground Floor

PHOTOGRAPH AND PLAN OF ANTIOCH, ILL., SCHOOL WHICH EXEMPLIFIES ONE OF THE LATEST IDEAS IN PUBLIC SCHOOL ARCHITECTURE—ESPECIALLY DESIRABLE FOR SCHOOLS OF MODERATE SIZE.

EVER since the Collingwood, Ohio, school fire catastrophe, there has been a growing tendency in public school planning toward the ground floor. The old style four-story and high three-story building is practically a thing of the past, being supplanted now by the two-story and high basement type, and in some districts by the one-story school.

The new high school building just now approaching completion at Antioch, Ill., is an example of the one-

story type. It was designed by the well-known school-house authority, Mr. G. W. Ashby, of the Chicago architectural firm of Ashby, Ashby & Schulze. The accompanying photograph gives a good idea of the exterior appearance and a glance at the floor plan diagram will show several interesting features of the interior.

You will notice that there are no stairs for the pupils to climb; no danger of panic or accident in case of fire. In fact, the fire hazard is small, since the boiler room is entirely outside the building proper.

Antioch is a town of some 2,000 people. This building will serve both as a high school and community center. The study rooms are planned to accommodate 100 pupils. Every class room is arranged so that the light comes to the pupils from the left side. In the rooms where pupils sit more than 20 feet from the windows skylights are provided. In fact, it is thru the liberal use of roof lighting that this one-story type of building has gained such headway.

The auditorium in this building—used also as gymnasium—is especially interesting. It is on the vestibule level six steps lower than the corridors and school rooms. Accordingly the corridors serve as balconies to the auditorium, so that the auditorium capacity is fully 50 per cent larger than would otherwise be provided.



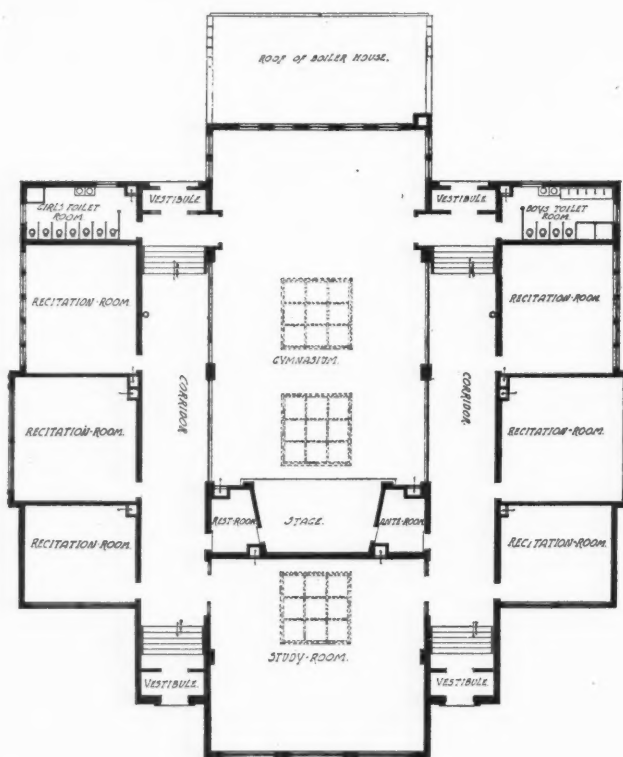
Plies a Dangerous Trade

"Well, Dinah, I hear you are married."

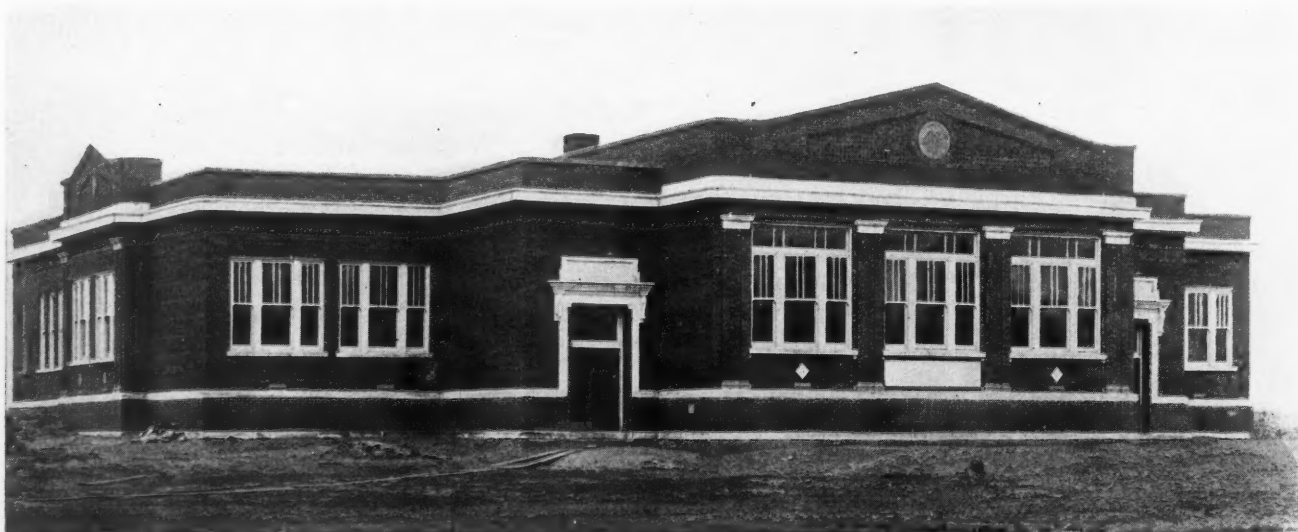
"Yassum," said the former cook. "I'se done got me a man now."

"Is he a good provider?"

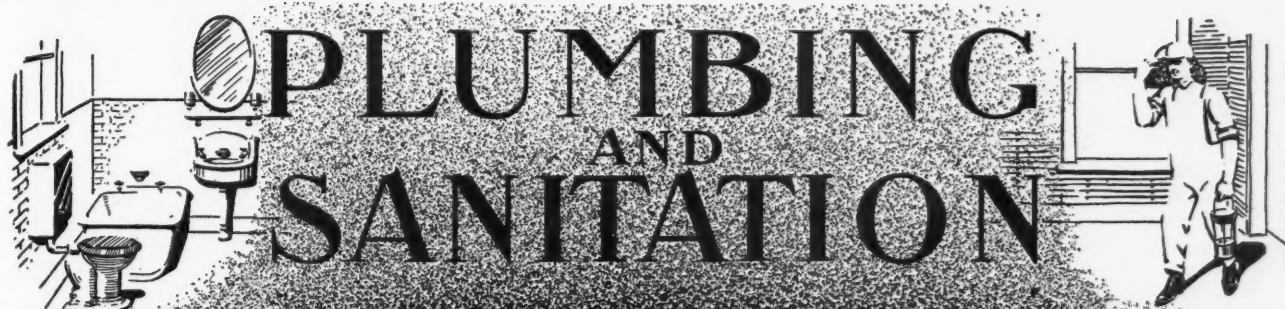
"Yassum, he's a mighty good pervided, but I'se powerful skeered he's gwine to get kotched at it."



Floor Plan of Antioch School.



New High School and Community Center at Antioch, Ill. An Example of the One-Story Public School.



What Constitutes Good Plumbing in Your Home?

IN TWO CHAPTERS—CHAPTER TWO

By C. F. Herington

Sanitary Engineer

(Continued from the April Issue.)

Piping

Now a word about the piping which is to be used in the plumbing system, as there are a number of kinds with a use for each, such as galvanized iron, black wrought iron, brass, lead and cast iron soil pipe. For the sewers and drainage lines in the house, cast iron extra heavy soil pipe should be used; this pipe comes in 5-foot lengths with a hub on one end and a bead on the other, the bead fits into the hub end and is packed tight with oakum and filled with hot lead, which is hammered or caulked into the joint, making a joint which is impervious to air or water. The drainage lines outside the house may be of tile with cemented joints all the way to the sewer in the street, or to the sewage disposal system, if there is one. Standard weight or coated pipes should not be used, as the coating is apt to hide such defects as sand holes and thin spots in the pipe, which will cause lots of trouble later on. For all underground work use extra heavy cast iron soil pipe, as it has been found that wrought iron pipe will rust and deteriorate very rapidly.

For the hot water lines it has been the experience of architects, plumbers and others that brass pipe is the best to use and will last a great deal longer than galvanized iron pipe, which is steel or iron pipe coated or galvanized with zinc to protect the body of the pipe from rusting from the action of the water. For with hot water the pipe expands and contracts with the heat, and brass will take up this expansion very readily, while the galvanized iron coating cracks and peels from this cause, and soon becomes useless as the water discolors and rust forms inside of the pipe. It has been found necessary to remove galvanized iron pipe where used for hot water lines in less than five years; while brass pipe has been in service for over twenty years and longer. Of course, brass pipe is much more expensive than the galvanized iron, but it is without a doubt the cheapest to buy in the long run.

For cold water lines, galvanized iron pipe is satisfactory.

Lead pipe is claimed by the manufacturers to be very good both for hot and cold water lines, for several

reasons; first, because lead pipe comes in lengths of sixty to eighty feet, necessitating but few joints, which are made by beveling one end of the pipe and expanding the other end, then wiping the joint with solder, thus practically fusing the two pieces of pipe together and making one continuous line of pipe, while in the iron pipe threads have to be cut, leaving rough edges to obstruct the flow of water. It is also claimed that iron pipe rusts badly enough when in constant use, but when it is turned off and drained and then turned on again it is much worse, as rust forms in scales and is pushed along the pipe until it accumulates at some bend or other fitting and will in time close up the pipe.

For vent pipes, ordinary black wrought iron pipe is all that is required.

At some places there is used for drainage lines genuine wrought iron pipe, with screwed cast iron fittings; this kind of pipe is used largely for high buildings and other places of like character, as the pipe is furnished in longer lengths than soil pipe and is also more quickly erected in place, as the pipe can be measured and cut to length in the shop and goes together on the job like steel work.

Fixtures

When it comes to selecting the fixtures to be purchased for your home, do not stint yourself; but select the best that money will buy, for it shows very poor judgment and poor economy to save money in the first cost and pay out the difference in plumbing bills for repairs every year. It is also much better to have only a few fixtures and have them constantly in use, than to have a number of fixtures for show and not used, for fixtures not in use are a menace to health from unflushed overflow pipes and evaporated traps.

In selecting a water closet, you can choose a washout closet which consists of a basin and trap built in such a manner that there is a small body of water in the basin which is separate from the trap. This is a cheap closet and sanitary in every way, but is inclined to be very noisy in operation. A siphon closet is one in which the contents are removed by siphonage, and these closets are almost noiseless in operation, and

there is at the present time a siphon-jet closet on the market which the manufacturers claimed to be absolutely noiseless in operation which will appeal to a number of people. There is a choice of a low or high tank for the closet, which is a matter largely of taste, as there is practically no difference in their manner of flushing. A closet tank usually contains about eight gallons of water, which is used in one flushing, and bear in mind that in no case should your water pipe be directly connected to the closet except thru this flushing tank or a flush valve, so as to be sure and prevent any danger of odors backing up into the water mains.

For the bath tub there are but practically two styles or shapes to choose from, the "Roman," which slopes at both ends, and the "French," which slopes at one end. As bath tubs are not subjected to hard usage, there are a number of materials, such as enameled iron ware, porcelain enameled and vitreous ware, which are all satisfactory. One of the best arrangements in placing a bath tub is to have what is known as the built-in bath. This bath is placed in the corner and as the base reaches the floor, there are no corners or legs to collect the dust; also it makes a very nice appearing bath. Do not, by any means, use a copper or tin-lined bath and built in with wood, as they have been condemned as unsanitary.

For the lavatory there are so many styles and kinds that it is simply a matter of taste for the beautiful, except that all the fixtures in a bathroom should harmonize one with the other and with the tiling, for it is best to have the walls and floor tiled, not only for its appearance but for its utility.

In the kitchen no money should be spared for show, but all spent for utility, as the kitchen requires the most durable fixtures in the house, for they receive almost constant and hard usage. Provide a sink either of enameled iron or of porcelain ware, the latter is claimed to be the most durable, and is of course the most expensive; see that there are drain boards on each side of the sink, and last of all, have good faucets placed on the fixture, for faucets are the cause of many annoyances to the lady of the house, and as there are so many faucets on the market that are utterly worthless, it pays to get the best.

A pantry sink is considered by some as a luxury, and perhaps they are, as a good pantry sink in German silver or white metal will cost about \$200.00 to install, but for washing glasses and fine china they are indispensable.

For wash trays the best material to use on account of the hard usage to which they are subjected is the solid porcelain ware, as it will not crack or break if the wringer falls into the trays, while the enameled ware and soapstone will in all probability, thereby leaving a crack and an opportunity for rust and germs to collect and ruin the clothes.

Range Boilers

In selecting a range boiler, there are a variety of kinds and sizes from which to buy. The size required for a family of five, that is, two adults and three children, is about a 40-gallon boiler, while for a family of five adults a 70-gallon boiler would be about right. You can place the boiler in the kitchen on a stand near the coal range, as shown in Fig. 4, or suspend it from

the cellar joists. If the boiler is placed in the cellar and there is a gas range in the kitchen instead of the coal range, then it is best to connect the boiler in the cellar to a small laundry stove and burn coal in the summer and in the winter season connect it to the

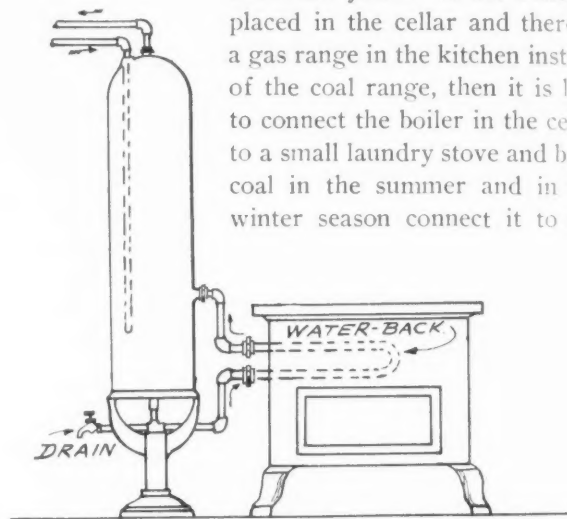


Fig. 4. Hot Water Tank in Kitchen.

heating boiler. This arrangement of a laundry stove burning pea coal at \$3.50 per ton has been found to be cheaper than burning gas at 80c a thousand feet, for the ordinary size family.

In selecting the boiler, those made of galvanized iron are used the most on account of their low cost, but there is the same objection to them as with galvanized iron pipe, and for that reason a copper boiler, altho more expensive, is the best to install. In installing a copper boiler, be sure and place a vacuum relief valve on the top, so that when the boiler is empty the pressure of the outside air will not cause it to collapse inwardly. Do not use a copper boiler and then connect it up with an iron water-back, but be consistent and use either iron, copper or brass thruout the hot water system.

Final Test

In conclusion, be sure and have the plumbing thoroly tested out before it is accepted and paid for; in fact, there should be two (2) tests, one called the "roughing" test, which is done when the pipes are all placed in position before any of the fixtures are attached. This test is accomplished by closing up all the openings in the pipes by means of testing plugs and then the whole piping system is filled with water up to the highest point in the system; this is allowed to remain for a period of two to four hours, and if there are no leaks in the system, the water will remain level; if there are leaks, they will plainly be seen and should be repaired and tested again until the water does remain level for a certain period of time.

CORRESPONDENCE



Questions Answered and Ideas Exchanged.

Our Readers Are Requested and Urged to Make Free Use of These Columns for the Discussion of all Questions of Interest to Carpenters and Builders

Better Buildings in Rhode Island

Perryville, R. I.

To the Editor:

I am truly glad that we brethren can have some space in the AMERICAN CARPENTER AND BUILDER columns. I have been in the family some time and greatly enjoy the magazine. I have noted with interest accounts of how to work fast and the frequent expression at the close of letters, "Yours for Better Building."

One man said recently that competition was so strong that better building was out of it. Indeed, many jobs are carried with a rush that does not admit very nice joint fitting. The price is cut so fine that frequently material is not the handsomest, in fact, not quite up to specifications.

I am sending photograph of a residence frame in Peace Dale, R. I., which, though plain in design, will be when complete, as good as anything on High Street in that town. I want to give different sketches of this house in two or three issues of the paper, so will go thru as the work progresses.

The frame is of as straight spruce and well seasoned as I have ever used in my many years of experience. Every part is



Timber Frame Well Handled on Peace Dale, R. I. House, Built by W. R. Card.

cut to fit in all respects, and spiked and nailed without slighting. When the frame was up it had much less vibration than many structures of heavier timbering. Our under floors, first and second story are cypress, of almost clear quality. The cellar wall is of broken block stone, 22 inches thick at base of wall and 18 inches at sill line. I won't take too much space this time, but I want to give my brother readers in a few issues some idea of what the old man does in certain cases along the line of better building.

W. R. CARD,
Contractor and Builder.

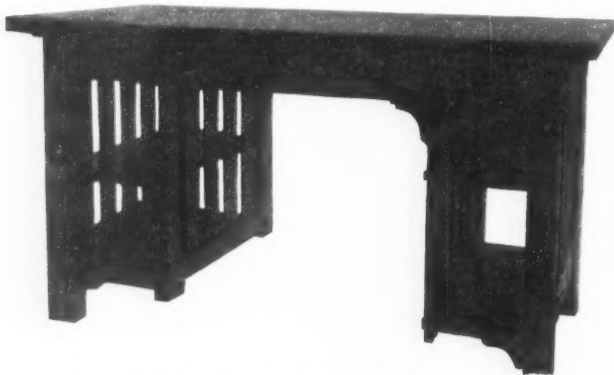


A Good Drawing Table

To the Editor:

Martinsville, Me.

I enclose check for \$2.00 to renew my subscription to your valuable paper, which has become a very close friend of mine. To say that I enjoy its monthly visits is expressing it altogether too mildly. I am beginning to feel that I can't get along without it, as each month it seems to grow better and better, and I feel that I must congratulate you on the good things you are putting into our hands each month.



Drawing Table and Desk Made by G. N. Bachelder.

I have noticed in nearly every issue that some brother carpenter has contributed something, and so I am sending a photo of a drawing table which I have just completed and which I find very convenient, and if you have space to spare, you may use it.

Wishing you unlimited success in your labors for us carpenters, I am.

G. N. BACHELDER.



A Help to Young Builders

To the Editor:

Wellsville, N. Y.

It is with pleasure that I enclose my renewal to your magazine, also the names of two new subscribers.

I highly appreciate the benefit I have derived from the pages of the AMERICAN CARPENTER AND BUILDER, and heartily recommend it to any one wishing to become more familiar with the building business. It made possible my undertaking work at a much earlier date than I could have done without the instruction so gained, having built the two houses aggregating about \$5,000, the summer I was 21 years old. I enjoy each and every magazine, and intend to take it as long as I am in any way interested in the building trade.

C. P. LUDDEN,
Carpenter and Builder.



Real Ventilation Assistance Offered

To the Editor:

Owatonna, Minn.

In looking thru your May issue, on page 110, we find a question asked by one of your subscribers, "Why does it sweat?" This is in regard to a corrugated iron garage, and we can very easily answer this question and can also offer a solution.

He says that he has tried ventilators, but he did not say whether he had tried ventilation. There is all the difference in the world between ventilators and ventilation. A ventilator is absolutely nothing but a piece of metal with a hole in it; and air can only go through this ventilator as it is allowed to enter at some other point.

In other words, the ventilator on the building means absolutely nothing unless you get a circulation. This building can be kept from the condition in which it is, provided he will make arrangements to have the air brought in at certain points so that the ventilator can have a chance to work.

If this party will send us a sketch of his problem, we will be glad to offer a solution for it.

KING VENTILATING CO.,
Per L. A. Klima, Gen. Mgr.



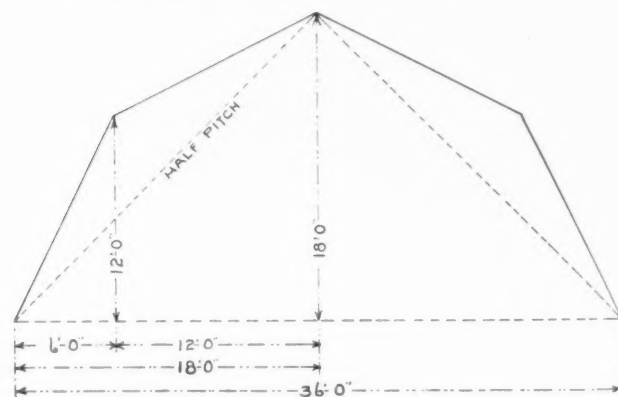
A Simple Gambrel Method

To the Editor:

Yorkshire, Ohio.

As you urge the subscribers to use the Correspondence Department, would like to show a diagram the way I proportion a gambrel roof. It differs a little from the way Mr. Woods explains to Mr. M. P., of Tyndall, N. Dak., in December number.

I always set purlin in from outside wall one-sixth the width of building and have the purlin post the length of one-third



Rule: Set Purlin in One-sixth Width of Building and Up One-third.

the width of building. This makes a nice-looking roof and an easy rule to remember.

ALVIN L. OEHRTMAN,
Contractor and Builder.



Resents Slight at English Bricklayers

To the Editor:

Toronto, Ont., Canada.

I am a regular reader and take the AMERICAN CARPENTER AND BUILDER, and I hardly think the article "Educating the Hand" in the January number is a fair one on the English bricklayer, as I have worked in the states of Michigan, Pennsylvania, New York, Massachusetts, Maine, New Hampshire and Rhode Island, also in different parts of Canada, and with nearly every nationality that can lay bricks, but still fail to see the man that has anything on the English bricklayer.

Then about going to England to make a record time. I think the contractors would, or could if they wanted to, find just as good or quick men there. Suppose he paid his men 60 cents per hour. Now, say, the wages there were 10 pence, or 20 cents per hour, he could have put three men on and I think the other man would have to go some to keep up to the three, as he could not expect them at 20 cents to work as hard as the man at 60 cents would. Also, several contractors told me personally that the best and swiftest workmen they had in the States today were Englishmen.

Now as regards the trowel. I think the article is quite wrong altogether. Not that I favor the English trowel, for I love and would use no other than a "Rose" trowel, but they would be no use for the old country, as the bricks there are much harder and they would not stand the use a "Brades" trowel does. Now, a long trowel is no use at all for buttering. You must have a short trowel for it. And then, a long trowel does not mean speed. How about the New England States where they use tubs instead of boards for mortar, and use the put and dip style in laying bricks—that is, just enough mortar for one brick? There you have to use an 8-inch trowel and still lay as many, if not more, bricks per day as anywhere in the States.

I think if you could give me the space, I could convince you that it is the same the world over, there is good and bad everywhere, and as regards the trowel, this puts me in mind of the time when I was in the old country. I was at a band contest, and they were talking about cornets of different makes, when a well-known player in the States said: "It is not the cornet but the fool behind it," and I think it is somewhat the same with trowels!

And as regards the work. I remember the first time I was put on front work on a good job in Birmingham, England—I was only fifteen years old then. The architect came and stood by, and knowing me personally said: "Now, Will, my boy, write your name on it." I guess you will know what that means. I tried, and at the age of seventeen years I carried a job thru with twelve million bricks, and had sole control of the job. I have been on this side of the Atlantic nine years, and have never been out of a job, and could have dozens if

I could fill them, and I am an Englishman and am proud of it, too.

Now, the reason I write like this is, I don't think things ought to be said to hurt anyone, whatever nationality, as some of the young ones when they read it take it for granted and throw it out on the jobs that the English are slow. That might be, but he is sure. But one thing which is sure is that a bricklayer from England, when he comes here, only has to learn that anything will do so long as it is up; but if one that learned his trade here went to England, he would have to learn again.

WILLIAM A. PUGH.



Two Plastering Questions

To the Editor:

Ashton Ia.

Would some of my carpenter friends give their best opinion as to the following questions?

Is it best when plastering over lath to let the first coat set long enough so the lath will get a chance to absorb the moisture from the plaster? Will it give the lath a change to swell enough to prevent the second coat from cracking?

B. DE VRIES.



How to Enlarge a Pulley

To the Editor:

Carnduff, Sask.

I have a 12 by 15-in. face diameter, iron clutch pulley on an engine, belonging to one of my customers, and he wants to have it larger in diameter.

Can some of the brethren give me an idea how to do this, and to fix it onto pulley to make a job that will stand up?

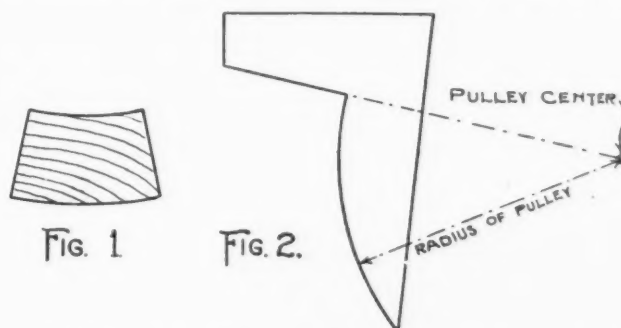
W. H. CORTIS, Building Contractor.

Answer—In order to lag an iron pulley in a manner that will hold, while the pulley diameter is increased several inches, procure some soft, yet firm wood—cypress is excellent—and work out lags enough to cover the circumference of the pulley to a depth which will increase the diameter to the figure required.

Fig. 1 shows one of the lags, which may be planed out,

several in a long strip, and then cut to the length required to reach across the face of the pulley. Usually lags are left projecting an inch or so on either side, thereby increasing the width of the pulley face.

To bring the lags at once to the proper shape without the trouble and delay of fitting each piece to the pulley face, tho this should be done to a slight degree when the lags are fastened in place, a lag "square" should be cut from wood $\frac{1}{4}$ in. or $\frac{3}{8}$ in. thick, as shown in Fig. 2. This engraving shows the lines necessary for laying out the lag square, and in making the lines should be worked to very closely indeed,



Details of Method Recommended by James F. Hobart for Lagging a Pulley.

in order that the finished lags may be accurate in shape and fit the pulley closely.

To fasten the lags upon the pulley, drill holes for wood screws, coach (lag) screws or for machine bolts or cap-screws, accordingly as the lagging is thin or thick, and the screws can be thrust thru from inside the pulley rim. If the lags are thick, use coach or lag screws. If the fastenings cannot be put thru from the inside, or as in case with a clutch pulley, the bolt holes cannot be drilled entirely thru the pulley rim, then use tap bolts which are let into the lags, holes being bored therein large enough to admit the heads of the bolts with washers underneath and with a socket wrench outside of the bolt heads.

When bolts of this kind are used, there will be trouble in boring the holes in the lags so the bolts will fit fair in the tapped holes in pulley rim. It will probably be necessary to mark the angle of each bolt on the ends of the lags, then tack on a light stick to act as a sight guide for the bit when boring the holes.

The lags must be fitted by means of a plane, when put in place, and made to bear fair against the pulley rim also against adjacent lags, but they should not be glued together. Tap each lag lightly with a hammer, as it is screwed in place and if any lag be too narrow, glue on paper or cardboard to secure the necessary width, but glue the paper to one lag only. The bolts should be about $\frac{3}{8}$ or $\frac{7}{16}$ in. in diameter for lags up to 3 in. thick, and $\frac{1}{2}$ in. in diameter for lags 4 to 5 in. thick. If the lags are not all of the same width, place lags of the same width on opposite sides of the pulley. Lay out the holes in pulley rim after the lags have been fitted. Put two screws or bolts in each lag.

After the lags are all in place, turn the pulley by revolving it at a very low speed and use a very narrow chisel or a pointed tool to remove the excess material. The face may be further smoothed with an iron plane and then with sand paper.

After the lags have been dressed to suit, protect them from the weather by filling them with shellac, applying several coats, giving the ends of the lags all the shellac they will take up. Apply with a rag or a brush while the pulley is revolving slowly.

JAMES F. HOBART,
Indianapolis, Ind.

Says to Include a Study Room to Every House

To the Editor:

Zion City, Ill.

Some houses are built without much planning. I think in planning a house the object ought to be to make it as useful, convenient and comfortable as possible for the whole family that is to occupy it. I believe that an up-to-date residence for a family should have one room to be used exclusively for a study and school room.

This study room should be fitted up with a blackboard, hanging maps, a drawing table for mechanical and architectural drawing, shelves and drawers for technical books and drawing material. The study room should be properly heated, ventilated and lighted; north windows are good for school rooms. There is so much studying for the school children to do at home with the present school system that they need a convenient room to study in. The parents of the family can also make good use of the room, for they have studying and reading, and accounts to keep if they are to keep up-to-date with their line of business, whatever it may be. We carpenters need a drawing table and instruments for making plans and details of some of the work that we have to do. I think everyone ought to have some knowledge of drawing, it is needed so much in any kind of work. So much for house planning; it isn't much, but every little helps.

I have my own study room at our house, and I draw plans for some houses that I build, and I have my little boys do some drawing, too. I make small T squares for them to use, and make their drawing-boards of wall board.

C. E. HOLCOMBE.

Fast Shingling with Gloves on

To the Editor:

Buffalo, Wyo.

I have received and read my last issue of the AMERICAN CARPENTER AND BUILDER. I have not been a member of this family of readers for more than two years, but I hope I will never miss a number in the future.

I wish to say that I live in the best inland town in the United States, Buffalo, Wyoming, which is thirty-five miles from a railroad—but the railroad is coming.

Now I would not dare dispute a man at his own game—not the shingler.

Mr. Friend, Mr. Butler, who is a reader and charter member of the AMERICAN CARPENTER AND BUILDER, and myself did a little shingling this winter. On January 7, 1916, Mr. Butler and I laid, to straight edge and two or more nails to each shingle, 16,225 shingles in 7½ hours—our roof was 86 feet long. And January 20, the same number on another barn in 7 hours. January has been a very cold month here, and we had to work with gloves on. I used a Pearson Shingle Nailer to do the nailing, while Mr. Butler did the laying, and I think in warmer weather we could cut the time (if any of the boys in our class want to go a little faster).

We are not shinglers by trade. We just commence from the foundation and do it all.

A. F. FISH.



Well Framed Barn

To the Editor:

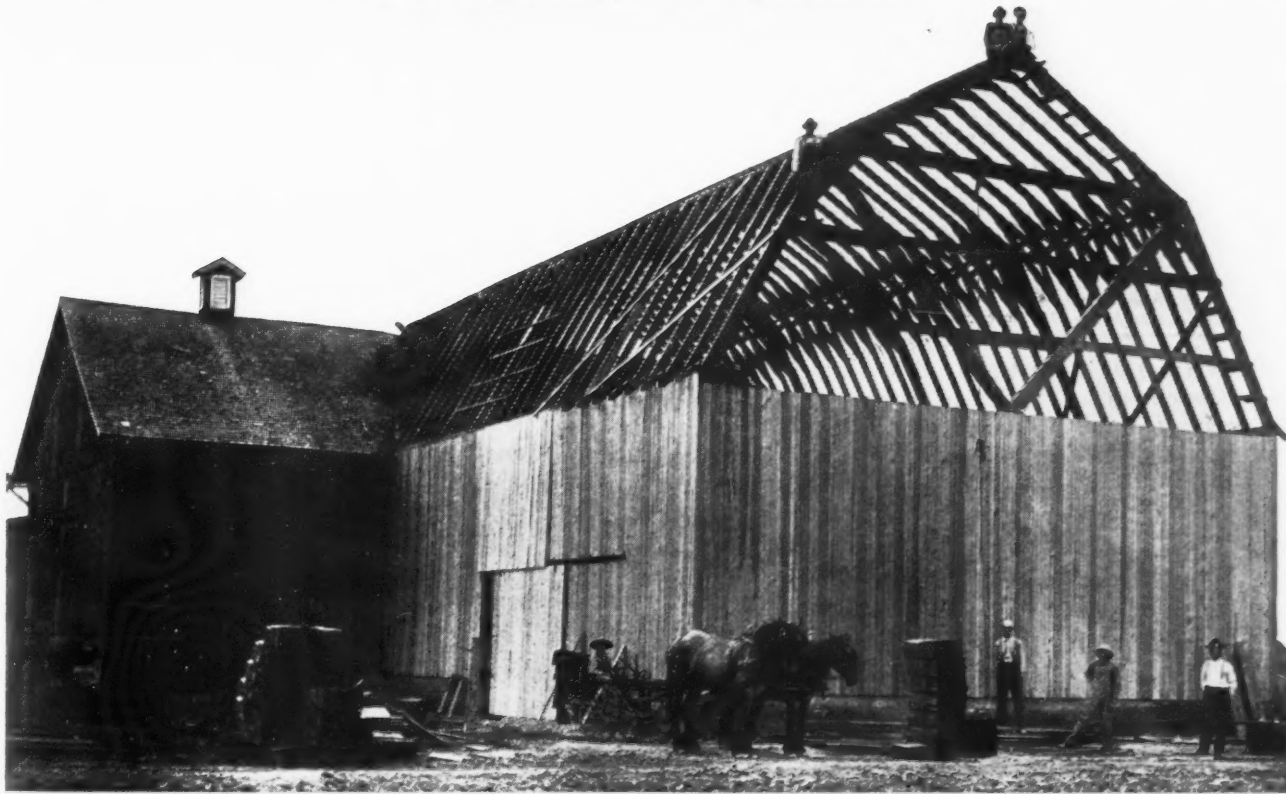
Gettysburg, Ohio.

Enclosed find check for \$2 for my subscription for another year.

Also I am sending you two pictures of a strawbarn I put up near Bradford, O. It is 40 feet wide, 50 feet long, 18 feet



Trussed Frame Straw Barn Built Near Bradford, Ohio, by W. R. Inman. Tie Rods are Used Extending from the Plate to the Girders to Prevent Spreading. Each Rafter Forms a Complete Truss and Spans the 40 Feet Without a Purlin Plate.



Another View of Large Straw Barn Near Bradford, Ohio. It is 18 Feet from the Sill to the Eaves and There is 30 Feet High of Unobstructed Space in the Loft.

to the square and 20 feet from the square to the comb. It is 10 feet from the loft to the square or 30 feet to the comb without any timber in it.

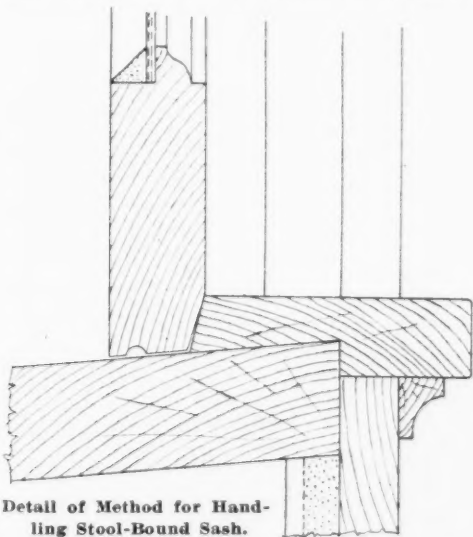
As you will see in the picture, I use rods from the plate down to the girders under floor to prevent spreading, and each rafter forms a truss of its own and spans the 40 feet without a purline plate.

W. R. INMAN,
Contractor and Builder.



To Relieve Stool-Bound Sash

To the Editor: Crookston, Minn.
Am herewith enclosing a little contribution to the Correspondence Department for the benefit of my fellow trades-



Detail of Method for Handling Stool-Bound Sash.

It speaks for itself and needs but little explanation. We all know how vexing it is to have the sash stool-bound. With this construction, the moment you lift on the sash, the weight separates; and yet when closed, it makes a tight, snug fit.

ABEL NESS, General Contractor and Builder.

Wants Ideas for Fruit Evaporating Plant

To the Editor:

Imbler, Oregon.

As I live in a great apple country, I would appreciate it very much if any of my brothers could give me an idea on a small fruit evaporating plant, which would save a lot of our fruit.

I have taken the "American Carpenter and Builder" for two years, and I find it a great help. I can scarcely wait till they come each month, as I devour every word. I have obtained many valuable ideas from this magazine, which has helped me in my shop this winter. I also have your 12 Volume "Cyclopedia of Construction," which I find is great.

I have just finished reading Bro. G. A. Daw's letter on fast shingling, and I think it is great, for I know that there are many men that can lay their 1,000 per hour, as I have done the same and lifted that sum; I laid 7,750 in 7¼ hours in La Grande, Oregon, and laid them right, and I can pick out four or five different men in this part of the country that can lay over 6,000 in eight hours.

Also, I can vouch for Mr. Pierce, as I know what a shingler can do, for I was one before I started contracting and building.

I think we would all be better off if we would break away from the old-fashioned straight edge, and buy a good hatchet and gauge, one of the Underhill style, and a pair of rubber sole shoes, and make a roof jack which can be made in five minutes with shingle nails. With this complete outfit you can increase your work one-third, and make a far better roof.

H. K. LARSEN,
Contractor and Builder.



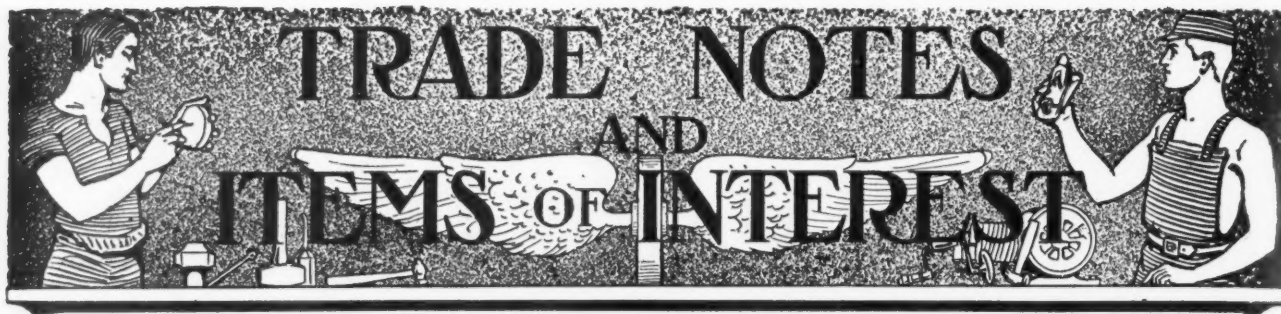
Wants Two Family House Design

To the Editor:

Manchester, N. H.

There is no need to tell you what a valuable book the AMERICAN CARPENTER AND BUILDER is. The only suggestion that I could make is that I would like to see some plans for two-family houses.

B. A. GARLAND.



THRU this department the Editors aim to keep builders, contractors, carpenters and architects in touch with what their friends, the manufacturers, are doing for them in new or improved tools and machinery, methods and materials—pertaining to building. These items are offered here as interesting information for our readers; they are not advertising. Take full advantage of the Bargains offered. Write for catalogs and booklets, and become thoroly familiar with these Improvements and New Goods.

A Vise Adjustable to All Positions

Have you ever considered what it would mean to the wood-worker if it were possible for him to hold his work just right, so that he could work naturally without undue twisting of his body and with the light shining on his working line instead of in his eyes, and with his work solid and secure so that he might direct his efforts right from the shoulder? This ideal condition is now at your command. You are now offered a tool that stands for real efficiency, truer and better work and a greater output, with less labor. This is known as the "Carpenter Vise." It is so flexible in its action, so powerful in its grip that no position could be desired but that the workman may hold his work there in the best position for convenient working, which means greatest speed with the least labor.

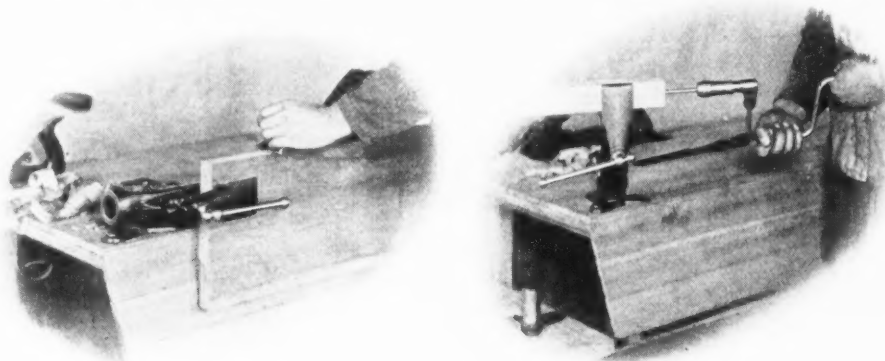
The vise is light enough to be carried in the regular kit of tools yet strong enough to meet the most severe service required by the wood worker.

The weight of the vise complete is fifteen pounds; the body and base are made of semi-steel. Screw, handle and nut are made of carbon steel. Every part is made to a standard gauge so that all parts are interchangeable, and the vises are machine-ground to a fine polish and nicely painted. These vises are guaranteed not to break.

The various photos will give a general idea of some of the

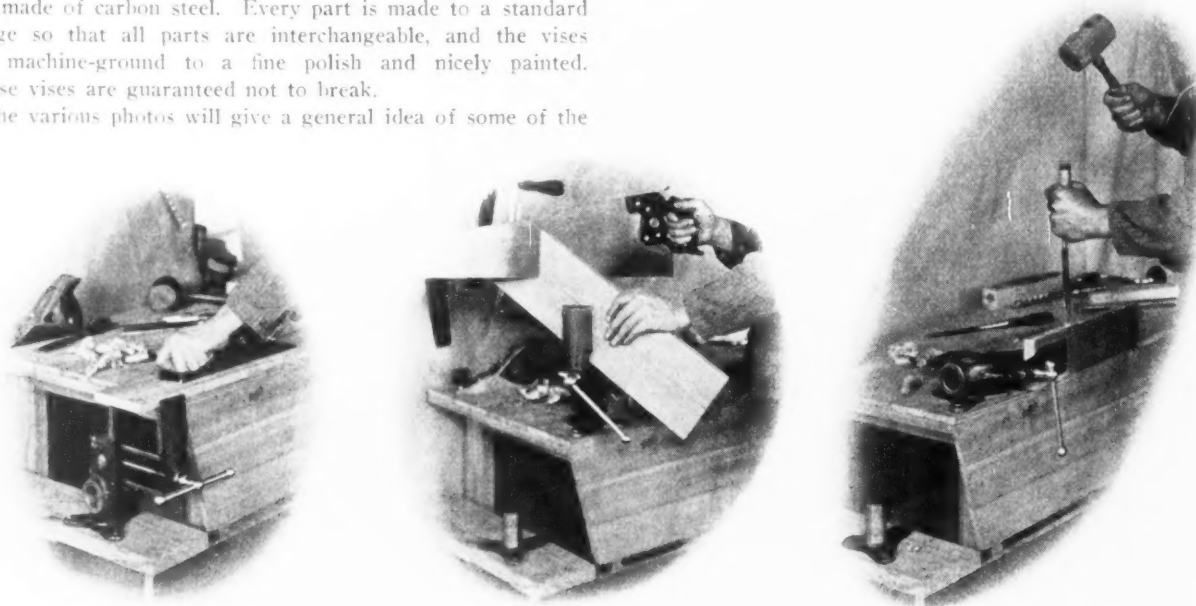
many positions in which the vise can be used, but the tool cannot be fully appreciated without being tried out under actual working conditions.

The "Carpenter Vise" is carried in stock by the leading hardware dealers, but if your dealer cannot show you a vise, write the Will-Burt Co., Orrville, Ohio, and they will



"Carpenter Vise" in Two Positions for Edge Planing and for End Boring.

send you one direct from the factory with the understanding that if, at the end of thirty days you do not find it a big money-maker and you are not perfectly satisfied in every way, you may send it back at their expense; they will ask no questions but will return every penny of your money.



Jaws Wide Open for Planing.

Set at an Angle for Mitre Sawing.
(Trade Notes Department continued to page 88.)

A Firm Hold and Rest for Chiseling.

MEDUSA WATERPROOFING



Residence of Mr. Jas. A. Bonham, Walworth, Wisconsin, kept damp-proof by Medusa Waterproofing. Cement Products Construction Co., Builders

Make Your Concrete Jobs *Watertight*

IF you want your block buildings, concrete floors, side walls, etc., to be absolutely damp-proof you can't afford to take chances in the choice of waterproofing. That's why you should use the kind which has stood the test—and that's why architects, contractors and engineers everywhere are specifying

Medusa Waterproofing

the *original* Concrete Waterproofing that has come through every test without a failure. We have scores of letters from contractors testifying to the worth of Medusa Waterproofing as the real means for making concrete absolutely damp-proof. And what's more it keeps the water out *permanently*—not merely for a year or two.

It only requires 2% of Medusa Waterproofing in the mix. We are also making **MEDUSA WATERPROOFED CEMENT**—a combination of the old reliable Medusa Cement and Medusa Waterproofing mixed in the proper proportions at our own factory.

Write today for our booklet "Medusa Waterproofing." It tells you of the great success other contractors have had with Medusa Waterproofing and Medusa Waterproofed Cement.

If there is no Medusa supply house in your town—send us your dealer's name.

The Sandusky Cement Company
Waterproofing Dept. Cleveland, Ohio

THE SANDUSKY



CEMENT COMPANY

MODERN STORE FRONTS

Their Design and Construction

By
Francis J. Plym, President
of KAWNEER MFG. CO., NILES MICH.




IN 17 PARTS, PART 5. (SEE FEBRUARY, MARCH, APRIL AND MAY ISSUES FOR OTHER DETAILS.)

NOTE: Mr. Plym desires this Department to be of greatest practical benefit to contractors and builders. He will gladly answer letters of inquiry, giving any special store front information desired. He has also prepared a very instructive illustrated booklet on modern store fronts which he will mail free of charge to any architect, contractor or builder desiring a copy. Under this heading is appearing a series of 17 typical store front designs, also a series of 17 plates of half size details of Kawneer store front construction.



TYPE No 50

COPYRIGHTED BY
KAWNEER MFG. CO.

TYPICAL ELEVATION OF CLOTHING STORE

FOR a business like the clothing business, where a number of different lines are carried, the ideal front is one which provides display space for each line.

With a front like the above the jogs form natural divisions so that every line can be shown to the best advantage every day.

Neckwear, shirts, shoes, hats, suits, etc., can each be displayed in the proper relation to the others.

The plan provides for two entrances to a corner store, so as to attract the traffic on both streets. It is so arranged that the display is equally visible from either side, and is absolutely symmetrical in design.

The touch of distinctiveness is had by the incorporation in the transom

glass of the art glass lettering, and by the use of the contrasting colors of the 6 x 6 tile in the entrance.

The up-to-date clothing merchant, doing business behind such a front, this, need have little fear of competition.

The Kawneer Manufacturing Company will show "up-to-date" KAWNEER STORE FRONT designs, for various other types of business, such as Grocery, Hardware, Millinery, etc.

The details on the opposite page, drawn half full size, show some of the members which constitute KAWNEER STORE FRONTS. Readers are asked to cut these out, as they will prove to be a valuable reference asset to the future.

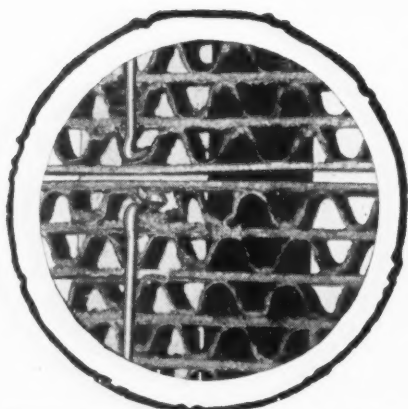
WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER



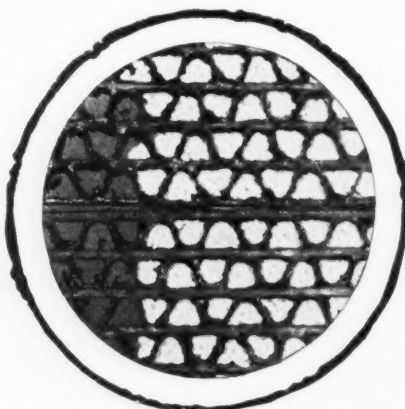
VERTICAL SECTION

Kawneer

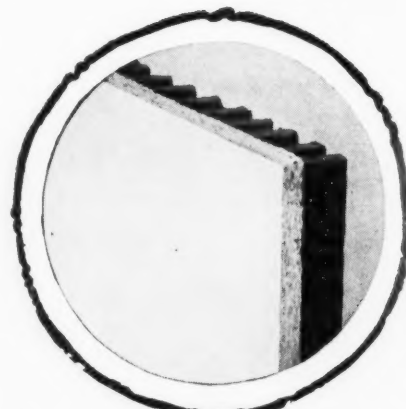
STORE FRONTS



Keezon Cellular Lath Put on with Special Long Wire Staples.



Back View of Keezon Cellular Lath Showing the Perfect Key.



Edge of Keezon Cellular Lath. Plastered.

Church Buildings Use Keezon Lath

Two new important structures recently put up in St. Louis are the new institutional building for the Kingshighway Presbyterian Church and an addition to the Sacred Heart Convent. In both these operations Keezon Cellular Lath was used, and it is interesting to note the comments of the contractors upon this particular form of construction.

Mr. George F. Bergfeld, President of the Bergfeld Realty Co., which handled the contract, said:

"Yes, we used Keezon Lath and found it so satisfactory in every way that we take great pleasure in commending it."

Mr. P. Rowan, plastering contractor, who did the plastering, even more emphatically lauds the Keezon advantages.

He said he had made tests of Keezon Lath extending over a period of a year and a half. He had tried it on walls, ceilings, solid wood columns, beams and channel iron partitions, finding it to be a most practical lath. He said further

that if he were building for himself he wouldn't think of using any other than Keezon Cellular Lath.

It is quite obvious that a lath receiving such praise from builders and contractors of this character warrants both investigation and consideration by all.

What the Cellular Lath Company is emphasizing, in its advertising is not so much the economies effected by Keezon Lath, as its positive advantages—the absence of cracking or sagging of plaster, the rigidity of the wall, saving of floor space, and, in stucco work, its non-rusting nature.

Write the Cellular Lath Co., 417 La Salle Bldg., St. Louis, Mo., for free sample and descriptive literature.

Modernize the Old Home

Automatic Sash Holders make the old home more modern, allow the windows to be raised and lowered at will just as the box frames with sash weights, cord and pulleys were

(Continued to page 90.)



These Homes Plastered with Hydrated Plaster

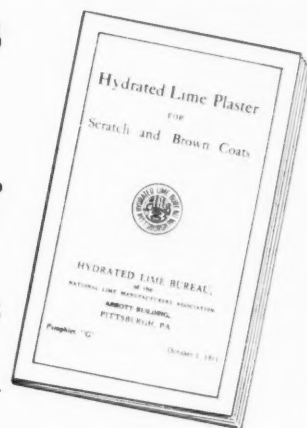
SOUND CARRYING WALLS ARE DONE AWAY WITH

Plaster Your Buildings With

Hydrated Lime Plaster for Scratch and Brown Coats

Absorbs and deadens sound. Puts quiet conditions into the home.

Ask for Bulletin G—contains complete information.



Facts About Hydrated Lime Plaster:

Sound—Dries out with millions of tiny dead air cells which make the walls absorbers of sound and produces quiet conditions in the home.

Economies—Has a high sand carrying capacity; also makes a saving in plaster through rettempering the droppings.

Straighter Walls—Permits plasterers making straight and true angles and surfaces.

Lath—Permits eliminating lath cracks and bucking.

Cost—Costs no more per ton than other plasters.

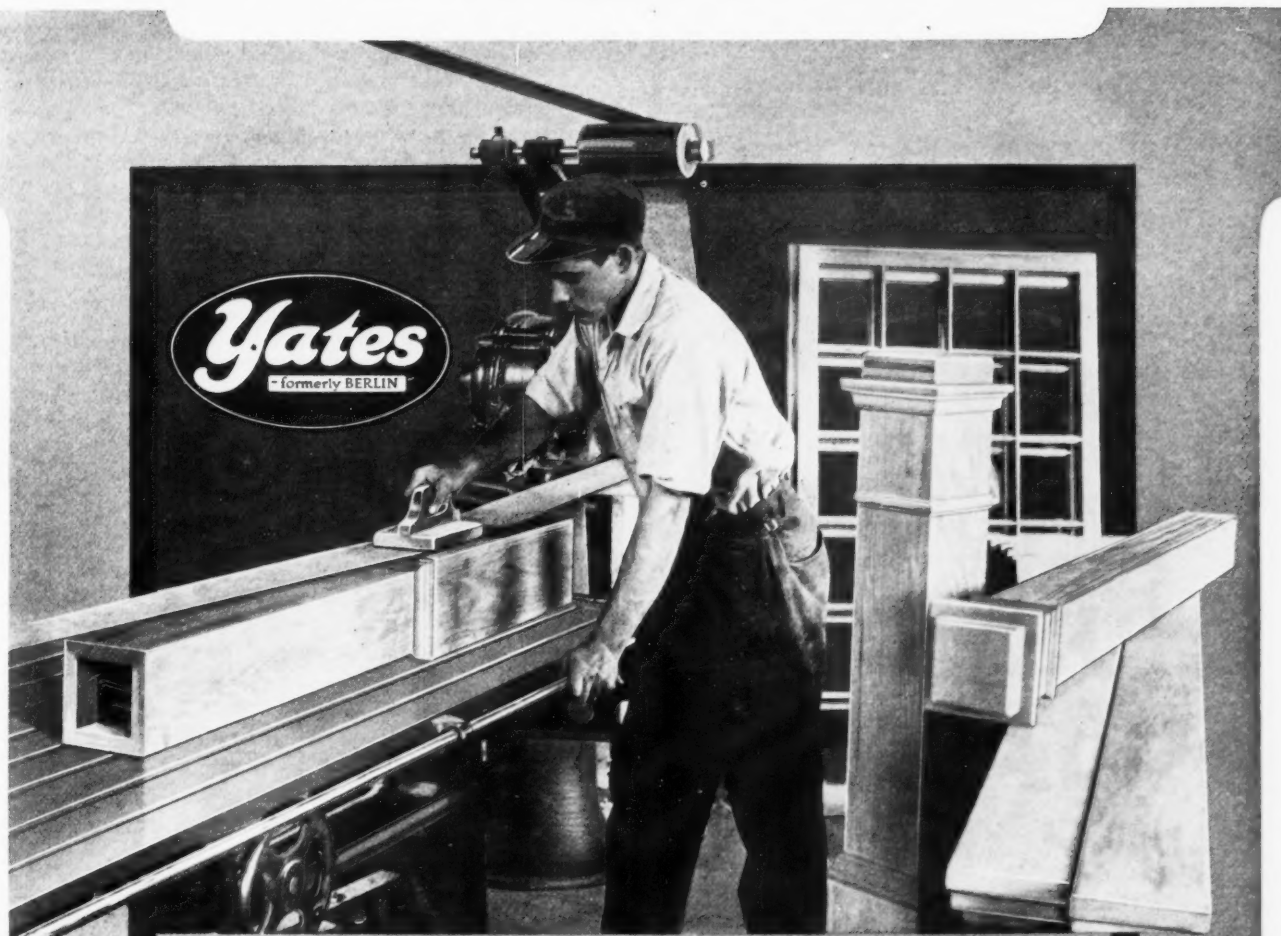
HYDRATED LIME BUREAU

OF THE

National Lime Manufacturers Association

1610 Arrott Bldg., Pittsburgh, Penna.





A New Belt Sander That Brings New Business

The growing demand for a finer wood finish has greatly increased sanding costs. Don't try to cope with the situation by investing in an expensive sander that can handle flat stock only. Don't lose time and trade by trying to reduce the amount of your expensive hand sanding. Investigate

The Yates Flexible Belt Sander

It eliminates four-fifths of your hand sanding, and adds the expense thus saved to your bank account. Its cost is so reasonable that the savings soon cover the initial expense—after that it's all "clean velvet". Its economy will enable you to include in your bids, items your competitors can't afford. The low cost of its high quality finish opens a new field of trade among those who will buy the best as soon as it is put within their financial reach.

Send for Folder No. 427 describing this machine and showing what it will do—free to you without expense or obligation in any way.

P. B. Yates Machine Co.

BELOIT, WISCONSIN, U. S. A.

Successors to The Berlin Machine Works—Canadian Plant, Hamilton, Ont.



Seven rooms, bath and basement, to cost about \$3,500.00.
Aymar Embury, II, Architect, New York City.
Our new Home Builder's Book shows the plan.
Ask for it.

Whether you are designing a small house for the man of moderate means, or one along more pretentious lines

ARKANSAS SOFT PINE

Will appeal strongly to either client because of its invariably pleasing appearance, durability and moderate cost.

Affording as it does a wide choice in the matter of figure and at the same time lending itself successfully to any desired decorative treatment, it is indeed a finishing material of all 'round merit.

Arkansas Soft Pine is a non-resinous wood possessing a tough fibre, fine grain and soft, lustrous texture, all of which make for well-balanced absorbing qualities. Stains or flat white are applied direct to the wood without the necessity of any preparatory filler or shellac, so that a uniform, even absorption of the color or white lead is assured.

Due to the definite non-resinous character of the wood, it positively will not discolor the white enamel from underneath, nor dim the luster of waxed or varnished finishes.

Our finished samples will bear out the foregoing statement. We'll send them on request. Address Dept. D.

Arkansas Soft Pine is trade marked and sold by dealers.
See that yours supplies it. He can.

Arkansas Soft Pine Bureau
Little Rock, Arkansas



WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER

in use and Automatic Sash Holders go even a little further. They absolutely prevent the window from falling, eliminating broken cords, repair bills and injured hands—they also prevent windows from rattling.

Besides, they have been sold all over the world and are giving complete satisfaction wherever installed. They are not only cheaper than sash weights, cord and pulleys, but take less time to install and are not unsightly nor annoying.

Automatic Sash Holder Mfg. Co., 52 Church St., New York, will forward circulars on request. Ask them, too, about their nickel plated advertising set.



Bommer Door Holder

It is desirable at times, particularly during the summer months to have doors standing partly or entirely open, and for this purpose attention is directed to the door holder made by Bommer Brothers of Brooklyn, N. Y., which is a popular and satisfactory door holder of this type. The door can be held open at any desired angle by simply pressing the foot-plate with the foot. To avoid marring the door the foot-plate moves with the plunger rod which is set away from the door. The plunger rod being U-shaped cannot turn in the casing which is a distinctive feature. The casing is formed from a single piece of sheet metal. The plunger rod has a rubber tip to prevent marring or slipping on the floor. Can be furnished in all the standard hardware finishes. It is an efficient article, and finished in the same high class manner characteristic of the well known standard line of Bommer Spring Hinges.



Door Holder.



Statement of the Ownership, Management, Circulation, etc., Required by the Act of August 24, 1912

of AMERICAN CARPENTER AND BUILDER, published monthly at Chicago, Illinois, for April 1, 1916.

Editor—Wm. A. Radford, 5341 Hyde Park Boul., Chicago, Ill.

Managing Editor—Bernard L. Johnson 6716 Ridgeland Ave., Chicago, Ill.

Business Manager—Edmund L. Hatfield, 1321 Hood Ave., Chicago, Ill.

Publisher—American Carpenter & Builder Company, 1827 Prairie Ave., Chicago, Ill.

Owners (if a corporation, give its name and the names and addresses of stockholders holding 1 per cent or more of total amount of stock. If not a corporation, give names and addresses of individual owners):

Wm. A. Radford, 5341 Hyde Park Boul., Chicago, Ill.

H. M. Radford, 5341 Hyde Park Boul., Chicago Ill.

Roland D. Radford, 5341 Hyde Park Boul., Chicago, Ill.

Wm. A. Radford, Jr., 5341 Hyde Park Boul., Chicago, Ill.

Geo. W. Ashby, Berwyn, Ill.

E. L. Hatfield, 1321 Hood Ave., Chicago, Ill.

Known bondholders, mortgagees, and other security holders, holding 1 per cent or more of total amount of bonds, mortgages, or other securities (if there are none so state):

There are no bonds, mortgages, or other outstanding indebtedness against the American Carpenter & Builder Company.

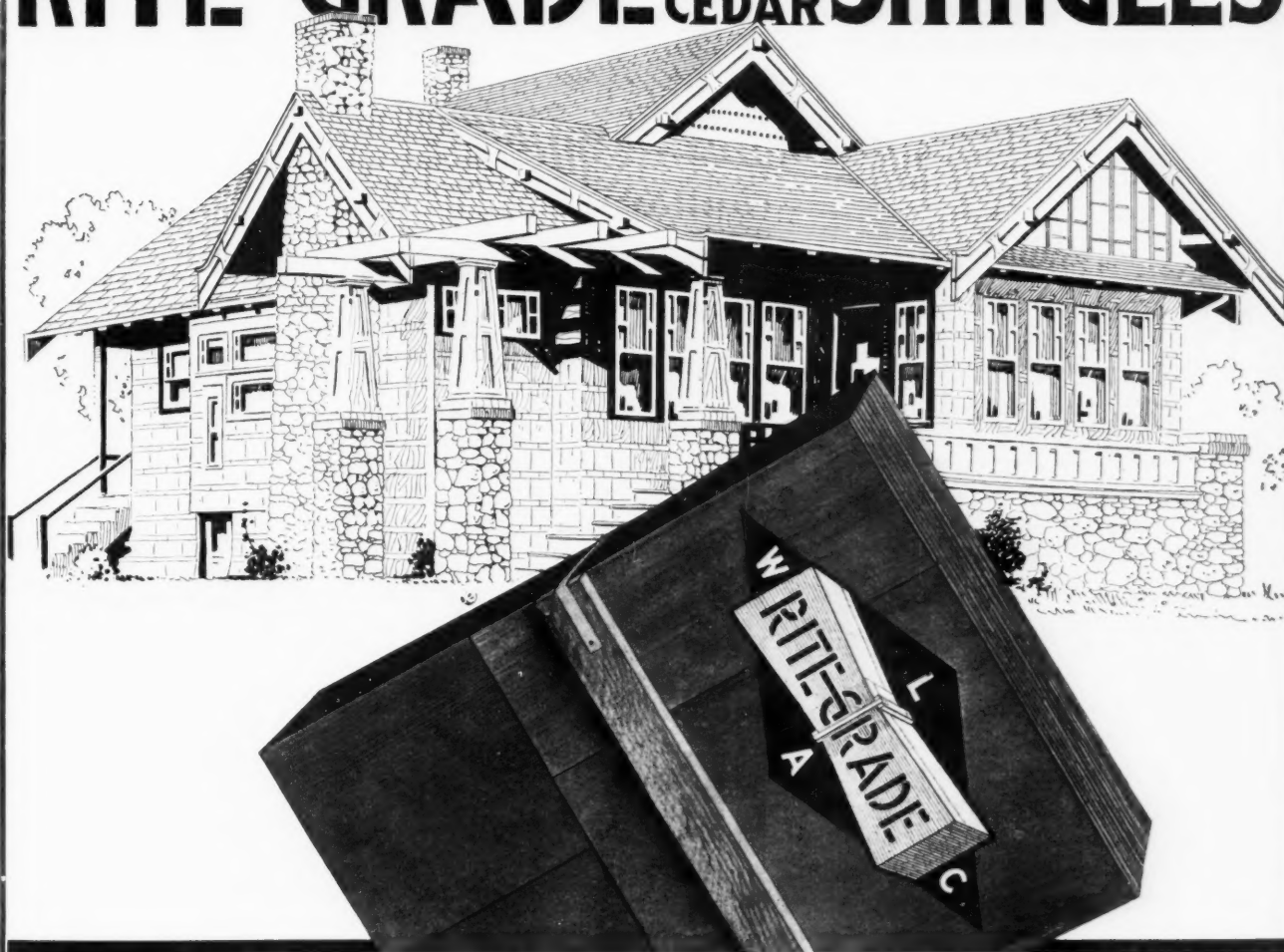
E. L. HATFIELD, Business Manager.

Sworn to and subscribed before me this 17th day of March, 1916.

JEANNETTE A. NICHOL, Notary Public.

FOR A LIFETIME or for a Century

RITE-~~GRADE~~ RED CEDAR SHINGLES



YOU CAN IF YOU WILL! AND WHY NOT?

—in RITE-~~GRADE~~ you have the imperishable cedar shingle. Now lay it right, that's all! Acknowledge to yourself that it's worth while, that you can, in fact, build a shingle roof **good for a century**. It can be done. These are days of calculated efficiency! So now get nails the equal of the shingle, good, durable, wholesome, "worth while" nails, nails that will **last**. And **never blue steel** nails. Don't ruin a good cedar shingle with **lath nails**! Our books tell you lots of valuable things about shingles and nailing.

FOUR BOOKS: "*Bungalow Homes Book*," with plans; "*Distinctive American Homes*," with plans; "*Farm Buildings*" and "*Boy's Builder*." Two cent stamp to defray mailing each book. And read what we say about **real**, workmanlike, lasting, "**worth while**" RITE-~~GRADE~~ Red Cedar Shingle Roofs and Walls.

SHINGLE BRANCH WEST COAST LUMBERMEN'S ASSOCIATION
1022 WHITE BUILDING, SEATTLE, WASH.

Keeps Down Investment —Brings Up Profit

Builders of investment property desire the lowest possible cost because cost determines the profit on the investment.

Yet, at the same time, they must not sacrifice either quality or appearance. Give them what they want! Recommend the one wood that best serves their purpose—

North Carolina Pine

"The Wood Universal"

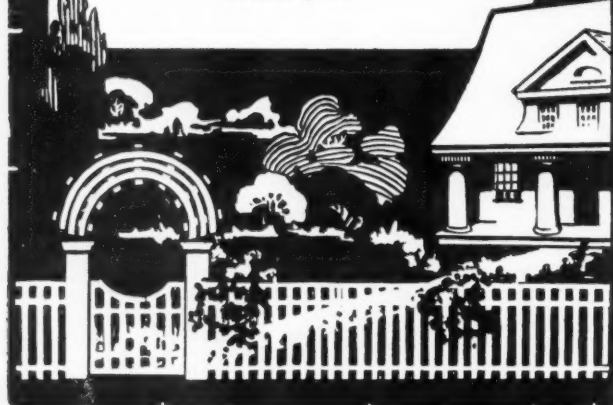
No wood at the price can equal it, whether used for interior or exterior work.

It possesses a rare beauty of grain; is splendidly responsive to paints, varnishes, wax, stains or enamels; is strong and durable and easy to work. And it is exceptionally low in cost.

Send for Free Reference Book

We have prepared a most instructive reference book on North Carolina Pine. It is not merely a compendium on North Carolina Pine but a most profitable help to every contractor and builder. Ask for Book A.

North Carolina Pine Association
Norfolk, Va.



Simonds Pension System

Among the large industrial concerns which early saw the wisdom of the pension system as applied to its employees, was the Simonds Manufacturing Company, of Fitchburg, Mass., which first made known the conditions under which its employees might receive pensions, January 1, 1908. Since that time the pension system has been in force with much success, in the five saw, knife, and file plants maintained by the company. Under the Simonds pension plan the company bears all the expense on account of old age or disability due to accident while in the employ of the company. An employee, who has served 20 years and has reached an age which is considered a minimum may be retired on half pay.

In maintaining its pension system the Simonds Manufacturing Company believes that greater good will result for both parties interested. Good service requires expertness which can only come from experience acquired thru continuity in position. It requires efficient system and method, enforced and carried out. It requires not the servile, but the respectful and implicit subordination of the employee to the system and the method. Therefore in the conduct of its big plants the company endeavors to secure the most efficient help possible and to make conditions such that the employee is anxious to remain in the company's service. Continuous service in the employ of this company eventually means a pension for the workman and adequate provision for the remainder of his life.

Another feature which is conducive to the welfare of the employee of the Simonds Manufacturing Company, is the old established Aid and Benefit Association which is maintained by the employees of the company. This association was established September 12, 1887, and was originally intended to dispense with the practice of taking up collections for the relief of sickness or accident among the employees of the factory in Fitchburg. The association is open to all employees and beside paying a death benefit also provides sick benefits ranging from \$3 a week to as high as \$15 a week.



New Officers for L. & I. J. White Co.

The L. & I. J. White Co., of Buffalo, N. Y., one of the oldest edge tool and machine knife manufacturers in the United States, has very recently changed its management; Mr. Walter S. Walls, for the past ten years Superintendent of this company, has been elected President and General Manager; Mr. R. R. Thompson, who has been handling the advertising, was elected Treasurer, and continues to take care of the advertising. Mr. John W. VanAllen as Vice-President and Mr. Frank H. Hamilton as Secretary were continued in office.

The new President having been connected with the firm for so many years, and thoroly familiar with the requirements of the trade, was unanimously selected by the Directors to succeed the former President.



Investigate the Kalamazoo Pipeless

The Kalamazoo Stove Company, whose slogan "A Kalamazoo Direct to You" is said to be one of the best known trade marks in America, are enthusiastic in their boosting of the one register or pipeless furnace proposition. Their illustrated catalog No. 947 is one of the worth-while books on this subject. Every one of our readers ought to have a copy of it, and there is no reason why they should not have this book for reference, as the Kalamazoo Stove Company will gladly mail it free to any of our readers.

Their offer to builders permits you to get this famous furnace at the manufacturers' wholesale price. The Kalamazoo pipeless furnace as well as the pipeless furnace proposition in general merits the careful attention of every builder.

*"The Carpenter could do more
with it, and with less effort,
than with any other wood."*

United States Government report on _____

No experienced carpenter need be told that the report from which the above quotation was taken was on

WHITE PINE

White Pine has always been the preferred wood with carpenters because it works easier, and lasts longer and "stays put" better in the exposed covering of a house, than any other wood.

A FREE MAGAZINE FOR CONTRACTORS

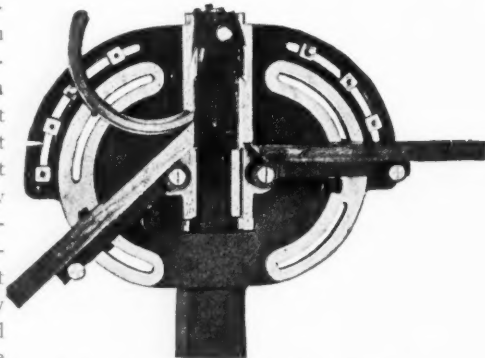
We are now publishing a bi-monthly architectural magazine, every issue of which is full of valuable and helpful information for contractors and builders. If you would like this magazine, write us and we will be pleased to place your name on our mailing list.

*Address, WHITE PINE BUREAU,
1635 Merchants Bank Building, St. Paul, Minn.*

Representing
The Northern Pine Manufacturers'
Association of Minnesota, Wisconsin
and Michigan, and the Associated
White Pine Manufacturers of Idaho

American Sash Trimmer Now Sold by Mann Corporation

Our readers will be interested to learn that the Mann Corporation, Kankakee, Ill., have taken over the complete manufacture and sale of the American Sash Trimmer from the Heald Machine Company, Worcester, Mass. There has been a constantly increasing demand from sash manufacturers for a machine that would joint diamond light and fancy sash with rapidity and accuracy; and it was to supply this demand that the American



Face Plate of American Sash Trimmer.

Sash Trimmer was presented to the trade. The hearty response with which the sale of this machine has been met over the entire world is significant of the fact that the American Sash Trimmer was a success from the start.

This machine is guaranteed by its manufacturers, the Mann Corporation, to net the user a positive saving of at least 75 per cent in the labor cost of fitting up any diamond light or fancy sash over the old method of doing this work by hand. Since the original investment required in the American Sash Trimmer is small, this machine will earn its cost in from one to two months consistent usage. The quality of work turned out by the American Sash Trimmer is much more accurate and satisfactory in every respect than the

old-fashioned hand-made product and one man can turn out from three to five times as much finished work in a given time according to the size and quality of the sash sticking. These claims are all covered by the manufacturer's guarantee and purchasers are offered a very liberal arrangement whereby these machines are shipped subject to approval.

The machine consists of a base casting with column upon which is mounted the face plate and swinging tables supporting the sash bars.

The column and base are of the best possible design to secure rigidity and strength. The base casting rests on three points, giving it a solid bearing on the floor, however rough and uneven, and is made heavy enough to stand firm without being screwed down.

The face plate is of special design and carries swinging tables which can be clamped at any desired angle in relation to the cutters by hand wheels at the back side of the plate.

The face plate is accurately machined and contains grooves to receive a set of stops, engaging with the "spring pins" in the ends of the tables which enable you to set to different angles and afterwards return to the same position without any delay in resetting.

This plate is also graduated on each edge to locate the tables instantly at the angles of 30, 45, 60 and 90 degrees.

On the tables are wooden bed pieces made of selected close grained hardwood, which are grooved out to fit the sash bar perfectly and prevent any splintering of the work when cutting at any angle.

The face plate also carries two special stops for use in fitting up curved work and these can be set to support the curved pieces at exactly the right angle to make perfect joints.

The tables can be swung below the center, if necessary, to cut the right way of the grain, and pieces can be fitted in a moment that would otherwise require lots of time.

(Continued to page 96.)



KEYSTONE

COPPER STEEL

Black and Galvanized Sheets and Terne Plates

Recommended to users only after thorough and honest service tests have proved this product's superiority and high resistance to corrosion. *Apollo-Keystone Copper Steel Galvanized Sheets* are unequalled for sheet metal work. *Keystone Copper Steel Terne Plates* are the highest quality roofing tin plates manufactured. Stamped "Keystone Copper Steel" in addition to brand and weight of coating as indicated by MF trade-mark. Our booklet, "Copper—Its Effect Upon Steel for Roofing Tin" is valuable to architects and builders. Sent free upon request.

American Sheet and Tin Plate Company

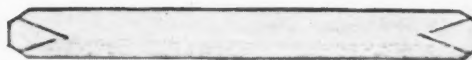
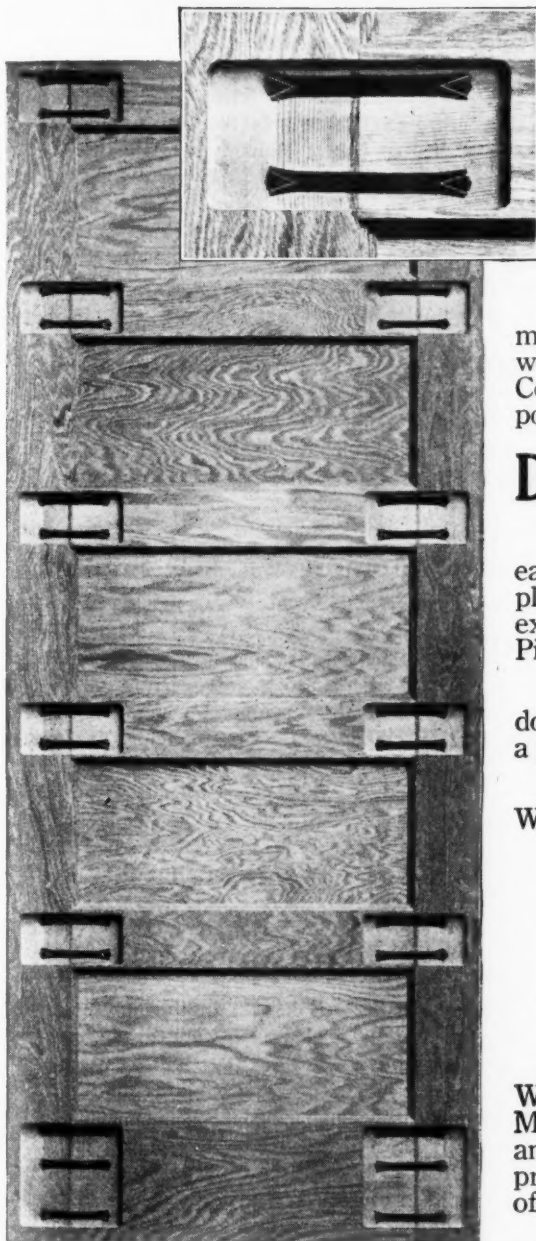
GENERAL OFFICES: Frick Building, PITTSBURGH, PA.

DISTRICT SALES OFFICES:

Chicago Cincinnati Denver Detroit New Orleans New York Philadelphia Pittsburgh St. Louis
Export Representatives: UNITED STATES STEEL PRODUCTS COMPANY, New York City
Pacific Coast Representatives: UNITED STATES STEEL PRODUCTS COMPANY, San Francisco, Los Angeles, Portland, Seattle

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER

—and now the Wedge Dowel



Manufactured under U. S. Patent No. 1,060,543

The Latest Evidence of Morgan Leadership

In addition to the features of construction which have always made Morgan supreme in the veneered door field, Morgan Doors will in the future be built exclusively with the Wedge Dowel Construction. That means additional insurance against any possible annoyance or trouble. It means

Doors That Can Never Come Apart

The Wedge Dowel made of hard wood is slit obliquely at each end as shown in illustration above. When clamped into place, the wedge formed by the slits is driven into the dowel, expanding the sharp ends and driving them into the soft White Pine core, locking stiles and rails together in a vise-like grip.

No pockets are left to gather glue at the ends of these wedge dowels. Instead the glue is forced along the dowel, thus making a perfect bond between dowel and core.

Morgan Doors are the only hard wood doors made with Wedge Dowel Construction.

Think what this improvement means to



Doors

Already safe in their leadership because of the exclusive All White Pine Core, this latest forward step in the building of Morgan Doors means even greater satisfaction for the owner, and means greater assurance to you that once a Morgan Door is properly hung it will give perfect service without the necessity of constant retrimming and rehanging.

Now more than ever Morgan Doors are the doors that safeguard your reputation as a high-class contractor.

*Morgan facilities
assure prompt
deliveries*

May We Send the **FREE?**
MORGAN Millwork Handbook

Every contractor, carpenter and builder can profit by the helpful information in this instructive book of up-to-date designs. Write for it today.

MORGAN SASH AND DOOR COMPANY
Dept. A-23, CHICAGO, ILL.

Factory: Morgan Co., Oshkosh, Wis.; Eastern
Branches: Morgan Millwork Co., Baltimore.

Displays: 6 E. 39th St., New York;
309 Palmer Building, Detroit.

Building Exhibits: Insurance Exchange,
Chicago; Soo Line Bldg., Minneapolis.

If your Dealer hasn't Morgan Doors, write us

If you've heard complaints about Wall Board— READ THIS STORY:

A FEW weeks ago, a carpenter in a New York State town was Upsonizing the ceiling of a handsome residence.

He ran short four Upson Board Panels, and telephoned to the nearest lumber yard for more board. Instead of Upson Board, they sent him another wall board.

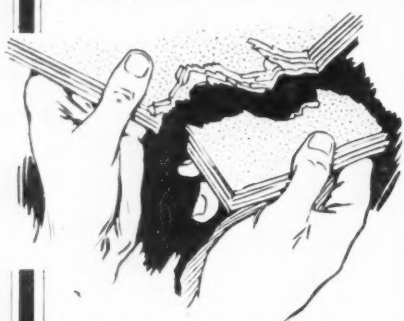
The boss carpenter considered for a while and then said to his men: "We'll be up against it for time;—suppose we take a chance on this board." They did!

The men broke one panel in the cutting, because the panels were so soft they could not be cut to trim. Then they nailed the other panels just as they had been nailing the Upson Board. But they could not help but drive the nails entirely through the panels. When they finally did get the panels applied, they found the board wasn't strong enough even to be held in position by the nails, and the panels pulled away. They were made of soft, punky jack-pine and tamarack.

"It's no use;—pull down these panels," ordered the boss. "We'll have to wait for Upson Board, to get a satisfactory job."

We can give you almost any number of instances of this sort—and will back them by affidavit. Incidentally, we have been told by responsible men that many of these inferior boards are growing worse instead of better, and that the increased cost of production is being met by using even more inferior materials than in the past. But what you want to know is that there is an **ALTOGETHER** DEPENDABLE wall board. That board is Upson Processed Board.

PROVE IT FOR YOURSELF




You couldn't do this with UPSON BOARD

Let us send you samples of Upson Processed Board. Test them in every possible way. You will see why Upson Board is called "artificial lumber." You will find that it is the only wall board that looks, feels, acts and works like lumber. Carpenters say they can apply at least a third more of Upson Board in a day than of any other wall board. Compare Upson Board with other wall boards. You will learn that some are so weak and punky that you can easily break chunks out of them with your fingers.

Talk with any carpenter who uses Upson Board. He knows. Examine any Upson Board installation that has been up for years.

**NOT ONE COMPLAINT TO THE
MILLION FEET USED!**

That's **UPSON
PROCESSED
BOARD** 

The Most Dependable Board Made in America

This record is unequalled, we believe, by any other wall board. It is the record on which hundreds and hundreds of carpenters have built up a fine paying trade that is keeping them busy every month in the year and has given a nifty boost to their incomes. It's YOUR opportunity.

Remember: Upson Processed Board is different from all other wall boards. It is the only wall board made of long, wiry, pure wood fibers compressed into strong, hard, stiff, woodlike panels, and **SCIENTIFICALLY PROCESSED**—kilo-cured like interior trim, waterproofed, surface-filled—saving \$5 to \$15 per 1000 square feet over the painting cost of other boards. It is the wall board that is made good to make good, for you.

Do not be confused by boards made to approximate Upson Board in construction and appearance. Such imitations are invariably made of cheap, irresponsible raw materials. If they had merit of their own, they would not be obliged to imitate Upson Board in construction, appearance or advertising. Your safety and protection lies in insisting upon genuine Upson PROCESSED Board—"THE ORIGINAL BOARD WITH A COLORED CENTER."

Write for samples and complete information. Address

The most completely equipped
wall board plant in America



**THE UPSON
COMPANY**
15 Upson Point
Lockport, N. Y.
Fibre Board
Authorities

The cutter head is accurately machined, holds the cutters in correct position and is adjustable for wear.

It is operated by a foot treadle and provided with a strong spring of proper length to insure uniform tension the entire length of the stroke.

This foot treadle is made amply strong for all work and has two holes at the rear end where it is pivoted, so that the pin can be changed to give double the leverage, if you desire it, when cutting hardwood bars with wide cutters.

We now come to the most vital part of the whole machine, the cutters, which are mounted in the machine like sides of the letter "A," with the cutting edge at the lower ends, formed to suit the requirements of the customer's sash sticking. They can furnish special cutters formed in such a way as to cope the bars and leave a short tenon on the end, if desired, for use in work that is mortised together. These cutters can be sharpened many, many times without changing the form of the cutter.

This machine enables the user to turn out as much work in one hour as in nearly half a day in the old way, which means to him the difference between doing this work at a profit or a loss; and sending out a nicely finished job, in place of one that is unsatisfactory to his customer.

If you are interested in an efficient labor saving machine of this type, write the Mann Corporation, Kankakee, Ill., for further particulars.



The Delco Announces a New Product

The Dayton Engineering Laboratories Company, of Dayton, Ohio, better known as the Delco, has just recently put on the market an outfit composed of a gasoline engine and electric plant, for use in farm, village and suburban homes.

Owing to the fact that their present business of starting, lighting and ignition equipments for automobiles is so very large, they have decided to establish a separate organization to handle the new product. The new company is known as The Domestic Engineering Co., and has its headquarters at present in the Delco plant, while an extensive new factory is being built. It was incorporated recently for \$800,000. The officers of the new company are:

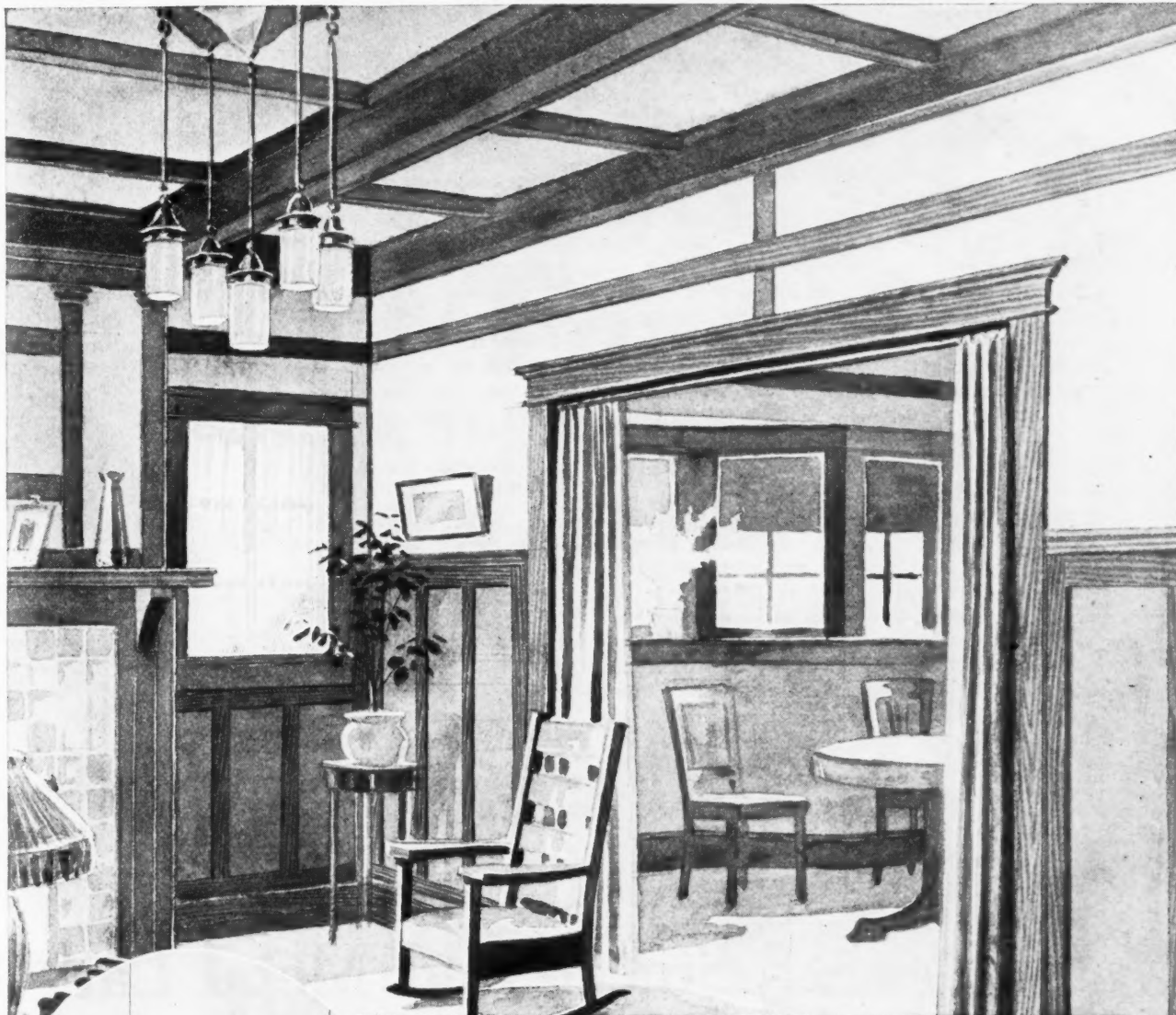
A. E. Deeds, President; C. F. Kettering, Vice-President; R. D. Funkhouser, Secretary and Treasurer, and R. H. Grant, General Manager.

The Delco Company is well known in the automobile industry, being the leading makers of high grade electrical equipment for automobiles. Last year's output was more than 125,000 complete systems of starting, lighting and ignition, and the prospects are for enormously increased business.

It is believed by the officers of the Delco that electricity on the farm is one of the greatest needs of the country. Having been reared in the country, they appreciate that many things now done on the farm at considerable cost of time and labor could be much more easily and cheaply done by electricity and they have set about to make this possible for the country use.

The Delco-Light is built to go out on the farm and furnish electric light for the house and barn and all other buildings, besides furnishing electric current for light power purposes. Much of their product, too, will find its way into small towns and villages where electricity is not now available. It will be found in stores, churches and other public buildings.

This is a big undertaking that the Domestic Engineering Company has on its hands. Its growth in this line will be watched with interest, and everyone who is acquainted with the brilliant success the Delco has achieved in the field of electric equipment for automobiles will appreciate that now, at last, the Delco slogan, "Electricity For Every Farm," is going to be realized in the near future. Write them for literature on electric lighting plants.



Fiberlic

Makes Stronger, Safer, Cheaper
WALLS AND CEILINGS

FEATURES: Fiberlic exclusive features—a wall board made from root fibre, chemically treated to remove from the fibres all the starchy matter that might harbor mould growth, all the resinous matter, thus making it more fire-resisting. It is the only patented, chemically treated, long-fibred wall board on the market.

ECONOMY: Fiberlic is not merely a substitute, but a new principle in building, providing as it does a wall or ceiling which will not deteriorate. More economical than lath and plaster, facilitates quick construction and has stood the test of time.

USES: Fiberlic effectually contributes to good taste in the development of fine interiors. From the viewpoint of utility it serves with equal facility the peculiar needs of Hospitals, Doctors' Offices, Stores, Theatres, and Office Buildings.

FINISHES: Fiberlic Paints permit the use of soap and water and scrubbing brush in the removal of stains and dust, thus insuring a permanently clean surface. Fiberlic is susceptible to a variety of finishes and is not restricted to the use of our finishes where something else is preferred.

Data and Samples will serve you advantageously in connection with your future buildings.

THE FIBERLIC COMPANY, Camden, N. J.

London (England) Branch: MacAndrews & Forbes Ltd., Finsbury Court, E. C.



Group Insurance Adopted by Chain Belt Company

The Chain Belt Company recently sent this letter to every employe of their institution. The main idea is that all employes who have been in the service of the Chain Belt Company for two years will be given an insurance policy of \$1,000 and those who have been in the employe for one year will receive a policy of \$500.

"In order to show our appreciation of loyal and efficient service, I have been instructed by the Board of Directors to announce that Chain Belt Company has contracted with the Equitable Life Assurance Society to insure the lives of those between the ages of 21 and 65 who had been in our employ continuously for one year or more on April 20, 1916, for the sum of \$500.00 each and those who have been in our employ continuously for two years on April 20, 1916, for the sum of \$1,000.00 each. In the case of the employe who has been with the company for one year, a substitute certificate for \$1,000.00 will be given her or him when the term of continuous employment will have reached the two year period. All new employes over 21 years of age will receive a certificate for \$500.00 upon completing one year's service. In the event of an employe leaving the company's employ the insurance, of course, expires automatically.

"This is term insurance and is given without charge, and in the event of death while the policy is in force the beneficiary named will be paid the amount of the policy by the insurance company. It will be issued for the year ending April 20, 1917, but it is our intention to renew from year to year unless in the judgment of the Board of Directors it shall prove unsatisfactory or experience suggests amendment. The insurance company is now preparing the policy and making out individual certificates of insurance, which will be delivered in a few days.

"The officers of this company are not only interested in you and the women and men in our employ, but also in the welfare of those dependent on you, and feel that in this manner they can show that interest to be real and substantial.

"We sincerely hope the cordial interests existing between us will long be continued.

"CHAIN BELT COMPANY,
"W. C. Frye, President."

Cast Iron Sockets for Modern Corn Crib

The modern corn crib has a concrete foundation and a concrete floor. The wall studs are securely and permanently seated in cast iron sockets, imbedded in the concrete while same is still soft. This makes a construction at the corn crib base far and away ahead of the old style wooden sill with the studs toe nailed onto it. Such a sill is short-lived, soon rots out, the nails rust, and the outward pressure of the corn or grain bursts the walls.

The studding socket for this purpose as made by the Sterling Foundry Company, Sterling, Illinois, is illustrated herewith. Like the other cast iron building specialties made by this foundry, it is known as "The Best." This is supplied with nail holes for securing the stud, and the flanges give a secure bond to the concrete. The hole through one of the flanges is for an extra iron reinforcement or tie into the concrete if such is considered necessary.

Write the Sterling Foundry Company, 8 Avenue A, Sterling, Illinois, for quotations and further particulars regarding these sockets.

(Trade Notes Dept. continued to page 104)



Cast Iron Stud Socket.



Stucco and Metal Lath Stand the Wear

Stucco went into the walls and posts of the porch on this frame house because the builder knew that there was where the wear and tear would be. To make the permanence of the job certain, the stucco was laid on a base of

Kno-Fur Expanded Metal Lath

Used Without Furring and Sheathing

"Kno-Fur" will save you time, labor and material as a base for stucco work because it is made with a "U" shaped rib that makes the fabric rigid as soon as the plaster is applied — no furring strips necessary. It is made with the "Kno-Burn" mesh with the bull-dog grip.

Send for booklet No. 33 with particulars on the whole North Western line.

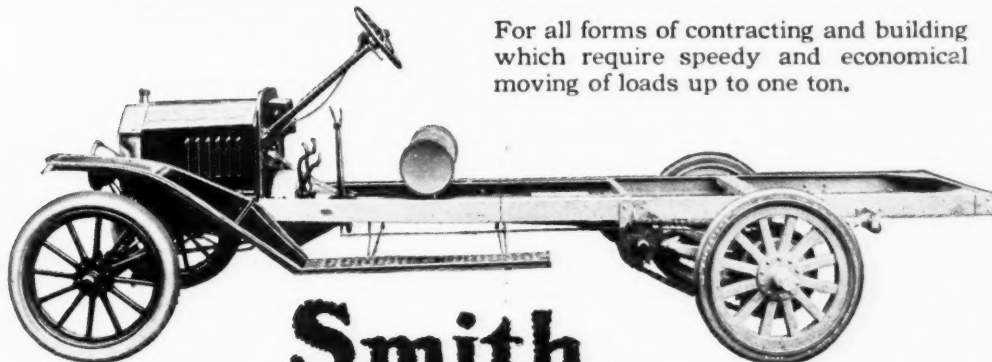
North Western Expanded Metal Company

Manufactures all types of Expanded Metal
903 Old Colony Building, Chicago, Illinois

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER

A black and white illustration. A large, tilted sign is being held by a hand. The sign reads "F. BECKER ASPHALT ROOFING". Below the sign, a car is visible on a street. In the background, there is a tall building with many windows. The illustration is in a classic, stylized manner.

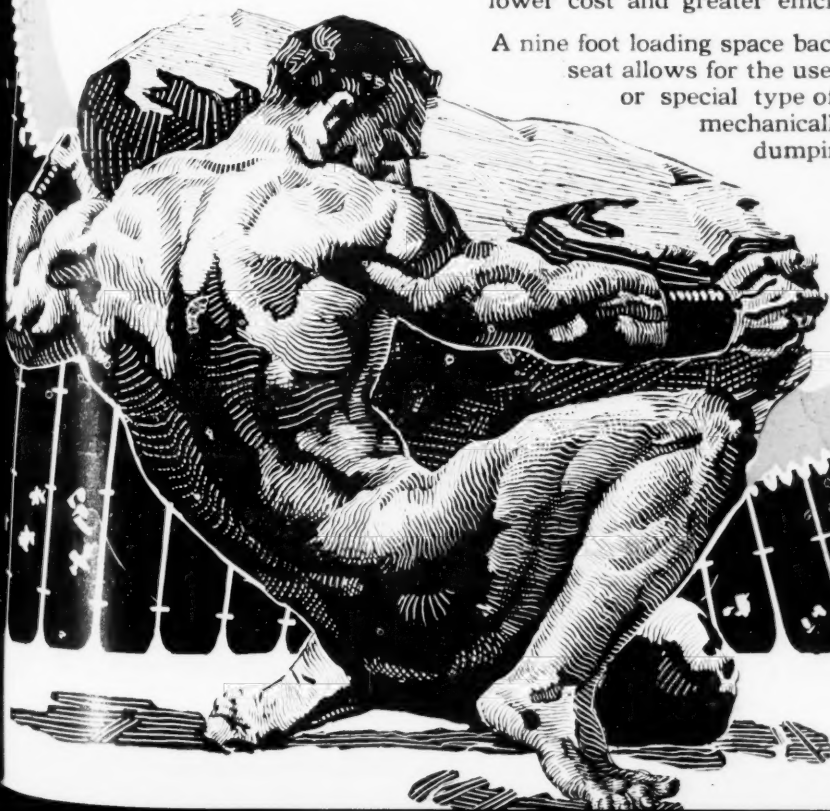
For all forms of contracting and building which require speedy and economical moving of loads up to one ton.

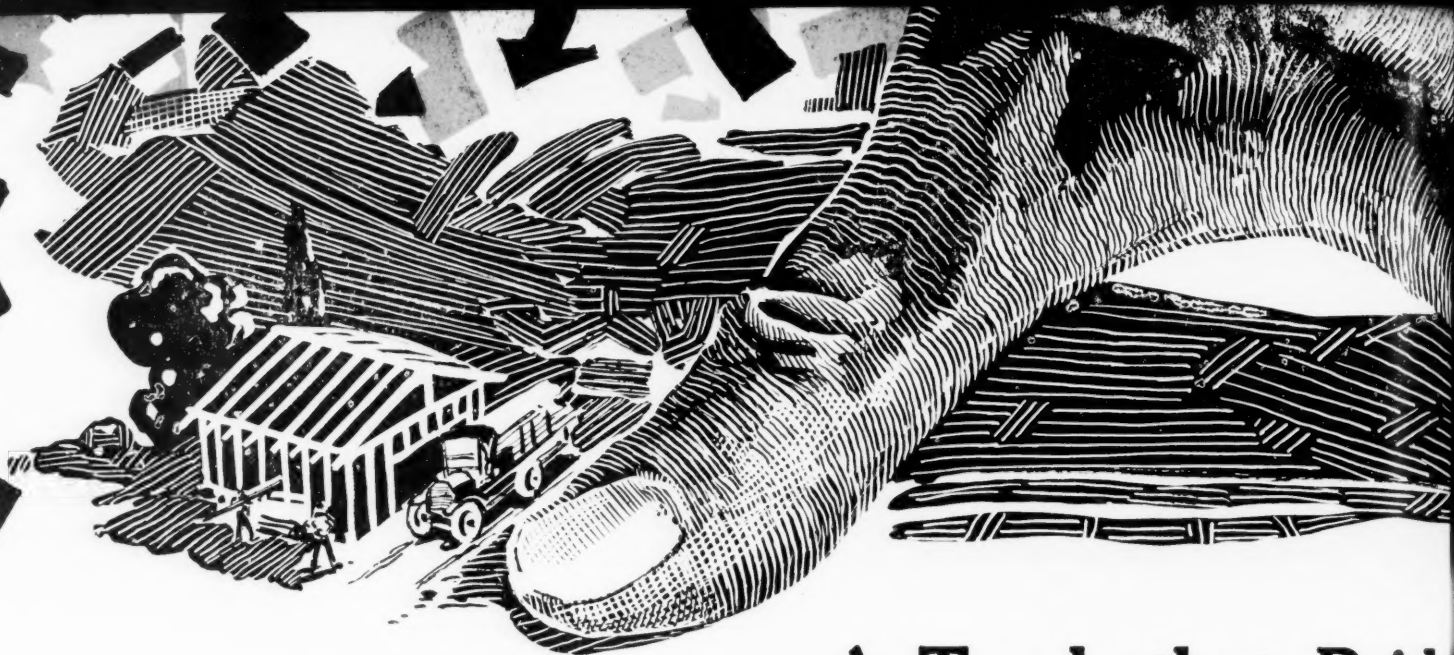


Smith Form-a-Truck

The Smith Form-a-Truck is doing work every day, in the service of contractors and builders, that cannot be satisfactorily done by any other form of motor truck. It is covering the same trips and doing the same work as heavier trucks of greater capacity at much lower cost and greater efficiency.

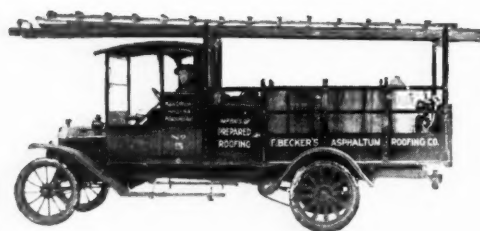
A nine foot loading space back of the driver's seat allows for the use of any standard or special type of body, including mechanically operated steel dumping bodies.





A Truck that Bridges the Gap Spans Distance and Revolution

The Cheapest Hauling Cost
and Builders on All Jobs—fr



**Becker's
Roofing Co.
Asphaltum
Says:**

"The Smith Form-a-Truck is all you need for it. It is giving us service equal in every respect to our heavier trucks with this advantage:
We are able to load our trucks with extra

THE STRONG, STURDY MECHANICAL CONSTRUCTION of the Smith Form-a-Truck appeals to contractors and builders who appreciate real engineering design.

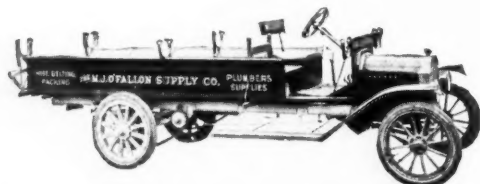
THE FOUR-INCH FRAME WITH EXTRA WIDE WEB and gusset plates at the rear, and the three cross members to reinforce the frame make possible a mechanical design that will do the hardest work.

THE DOUBLE CHAIN DRIVE, with the rear axle of the Ford used as a jack shaft, is the most dependable — most efficient driving system for a motor truck.

The sturdy rear axle that carries 90% of the load is real motor truck construction.

YOU WILL READILY APPRECIATE the ease with which two men can attach the Smith Form-a-Truck to any Ford chassis in a few hours. The Smith Form-a-Truck frame fits over the Ford frame and reinforces it throughout the entire length.

The Ford chassis itself is used only to carry the power plant.



The M. J. O'Fallon Supply Co., Denver, Colorado, says:—"The Smith Form-a-Truck we put into commission two months ago shows every evidence of being highly satisfactory and dependable. We have every confidence that it will prove valuable in our business."

THE FRONT WHEELS ARE CARRYING LESS load when the Smith Form-a-Truck is loaded to full capacity than when the Ford is used as a touring car with five passengers. You get such real strength in construction that the Smith Form-a-Truck is practically everlasting.

SPEEDY ECONOMICAL SERVICE PROVED to contractors and builders who deal in actual figures. You want definite proof. The records of service kept by Smith Form-a-Truck users show the lowest hauling cost in the world.

TIRES LAST FROM SIX TO EIGHT THOUSAND miles and because they are not big expensive tires, tire cost is a small item.

GASOLINE CONSUMPTION AVERAGES from twenty to fifteen miles per gallon. This is the highest mileage ever obtained from any motor truck of one ton capacity.

REPAIRS AND REPLACEMENT CHARGES are practically negligible. The Smith Form-a-Truck is simple in construction—so sturdy and so strong that it does the work with a minimum of attention.

THE INVESTMENT WHICH YOU MUST CHARGE to your hauling department is low. \$350 and the price of the Ford chassis, with a small added amount for the body, is the total amount involved.

YOU CAN WRITE OFF THE ENTIRE COST of Smith Form-a-Truck equipment in one year and still find a charge for hauling less than if you used heavier, more expensive trucks.

Bridge — Standards of Economy World for Contractors Biggest to the Smallest

materials which we use, also our men, and get on in good shape, which is not possible with our trucks. The operation and upkeep cost has been satisfactory, and we are glad to give our heartiest recommendation to the Smith Form-a-Truck."

Smith Form-a-Truck will be in excellent condition, after service year in and year out.

HAVE TO FIGURE A CERTAIN PORTION OF equipment on each job you bid on. The difference in cost, if you use Smith Form-a-Trucks, may be the deciding factor in getting the contract for you.

SMITH FORM-A-TRUCK EQUALS IN DURABILITY efficiency the most expensive trucks built. You are getting the important advantage of low cost, without sacrificing strength.

TO A FLEET READY FOR IMMEDIATE DELIVERY at the time you are getting busy on your big jobs: materials, hiring men, starting work, rushing your equipment.

DAYS' DELAY MAY BE DISASTROUS. You can take immediate action. We are prepared for you. We can guarantee immediate shipments on any order of a fleet of Smith Form-a-Trucks. Our present output is 300 a day. Output for the year will be 50,000 jobs.

40% OF THE TOTAL ESTIMATED PRO- portion of motor trucks—all makes—for 1916. This is the most important thing for you to consider.

FACTOR OF STRENGTH OF THE SMITH FORM-A-TRUCK attachment has been figured out to allow for any type of standard of special body.

This is the mechanically operated, steel dumping body that showed a five to one time saving over horse drawn dump wagons in work on excavation in Detroit, Michigan.

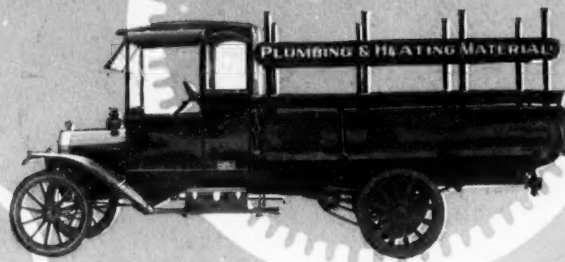
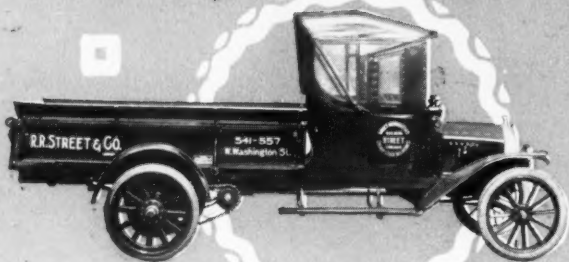


ONE DESIRABLE TYPE OF BODY FOR CONTRACTORS is the mechanically operated steel dumping body. We do not furnish these bodies ourselves, but we are ready to place you in touch with body builders who can take care of your demands immediately.

AND THE MECHANICALLY OPERATED STEEL DUMPING BODY has been used with tremendous success on Smith Form-a-Trucks.

THE SMITH FORM-A-TRUCK ITSELF IS LIGHT WEIGHT—can be driven over soft ground where heavier trucks would get stuck. You can go anywhere you can drive horses, and many places where horses cannot be used.





WE ARE DEVOTING THE MONTH OF JUNE TO CONTRACTORS and builders all over the country. Special tests are being made, special reports are being secured, and special attention is being paid to the adaptability of the Smith Form-a-Truck to your individual requirements.

Smith Form-a-Truck dealers all over the country are talking to contractors and builders. Thousands of Smith Form-a-Trucks will be sold to do work on jobs similar to those which will constitute your summer's work.

And the contractor who gets the Smith Form-a-Truck equipment first will be enjoying a big advantage—he will be enjoying a money saving in hauling cost—he will be enjoying the advantage of low charge for hauling equipment—and he will be enjoying perfect service from his trucks.

Smith Form-a-Truck Co.

934 Smith Form-a-Truck Building
1470 Michigan Boulevard, Chicago, Ill.

Send for our Booklet—

“It Solves Your Delivery Problem”

If you are interested in economical transportation—
if you want to save real money in your hauling
department—if you want to get the benefit of the experi-
ences of others—send for our booklet,

“It Solves Your Delivery Problem”

It contains information of real value, and
we will be glad to send
it to you without
any obligation
on your
part.

This Coupon

Date _____

Smith Form-a-Truck Co.

934 Smith Form-a-Truck Bldg.
1470 Michigan Boulevard, Chicago

Gentlemen: Please send me your booklet, “It solves Your Delivery Problem” and specific information regarding the adaptability of the Smith Form-a-Truck to my business.

I am located in a town of _____ population, and at present
maintain _____ horses _____ motor trucks in my contracting work.

The radius of delivery covered in approximately _____ miles. The
average load carried is _____ pounds. I roughly estimate my ton-mile hauling cost

at present at \$_____ If you can demonstrate to me that your Smith Form-a-Truck
provides the lowest possible hauling cost for my business, I am interested. Please understand that I incur no obli-
gation by making this request.

Name _____

Address _____

Town or City _____

State _____

I could probably use _____ Smith Form-a-Trucks.

I suggest as a good Smith Form-a-Truck dealer for this territory—

Name _____

Address _____

This ROOFING CATALOG

(The Largest and Most Complete Ever Printed)

WILL HELP YOU



The *Rex Products* catalog contains 112 pages and more than 180 pictures and illustrations. Besides complete instructions for laying all styles of asphalt shingles and prepared roofings, you will find in it a full description of each one of the 27 different *Rex Products* which we manufacture. You will also find much helpful information about slate, tile, asbestos shingles, tin and corrugated steel roofings.

We will send you this splendid catalog and a set of samples without cost or obligation to you. Write—

Flintkote Manufacturing Co.

90 Pearl St., Boston, Mass.

1102 Equitable Bldg., New York, N. Y.

659 Peoples Gas Bldg., Chicago, Ill.

Hennen Bldg., New Orleans, La.

REX STRIP SHINGLES

Will not blow up in the wind because the spaces between the shingles do not extend under the shingles in the course above, and so there is no opening for the wind to get under them and lift them. This is why Rex Strip Shingles make a tighter roof than any individual shingles.



REX STRIP SHINGLES
ARE ONLY ONE OF THE
REX PRODUCTS
DESCRIBED IN THIS CATALOG



WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER



Residence of Mrs. G.P. Barton
C.F. Driscoll, Architect Pasadena, Cal.

A Roof of Fireproof Shingles

Take a look around and see the wood shingle roofs that are rotten, curled and warped. See the slate and tile roofs that are broken, split and need replacing.

There are lots of men in your town who don't realize how this roofing problem can be solved. Why don't **you** tell them?

You can make a sale with real satisfaction behind it by specifying a roof that will bring everlasting protection against fire and weather and never cost a cent for maintenance.

Tell your customers about

J-M Transite Asbestos Shingles

—the roofing that takes the base rate of insurance—the roofing that is artistic, and the cheapest on the market, for its first cost is its last cost—the roofing that is backed to the limit by Johns-Manville Responsibility.

And at the same time you can land the contract for putting on the shingles. Here are two profits in one.

Write the nearest branch today for samples.

J-M Transite Asbestos Shingles are examined, approved, classified and labeled by the Underwriters' Laboratories, Inc., under the direction of the National Board of Fire Underwriters.

H. W. JOHNS—MANVILLE CO.

Boston Cleveland Philadelphia St. Louis Seattle
Chicago New York Pittsburgh San Francisco Toronto

Executive Offices: 296 Madison Ave., New York

Blue Ribbon Trailers

A thoroly practical business rig for carpenters and builders is the "Blue Ribbon" trailer made by the Durant-Dort Carriage Company, Flint, Mich. It is a rubber tired 2-wheel trailer with contractor's type body measuring 40 by 72 inches, 10 inches deep. Bottom boards are strapped with iron. The cross sills and spring bars are made of heavy hardwood; end gate drops.

The springs of the "Blue Ribbon" trailer are semi-elliptic 3¼ by 42 inch, 6 plate. This is a special trailer spring with shock absorbing attachment. Thirty-four inch wheels are provided. Tires 1¼ by ¾ inch steel riveted to the rims, or 1¼ inch runner tires furnished as an extra. The axles are 1¼ inch friction spindle or Liggett Ball Bearing.

A practical hitch is furnished, the draft being through a hardwood pole heavily ironed.

The price of this trailer is very reasonable. Any of our readers who are interested in trailers should write the Durant-Dort Carriage Company, Flint, Mich.



A New Use for an Overland

Overland cars have been used for pleasure, for business of all kinds, even for the grim pursuit of war, but it remained for the Overland dealer at Tulsa, Okla., to pull off an entirely new feat with an Overland touring car. A big house was being moved in that city. The horses were finding it quite a difficult task to pull the big residence. Ned



Overland Touring Car Drafted Into Service of House Moving at Tulsa, Okla.

Joyce, retail sales manager of the Carhart Motor Company, happened to be passing in an Overland "Six." Deeming that his car, with its 45-horse-power motor would be stronger than the team of horses that were tugging at the ropes, he had his machine hitched to the house. The "juice" was turned on and soon the house began to move.

Observe the resigned attitude of the horses. They hardly know whether to get peeved, because of their relegation in favor of the modern motor, or to feel relieved at the chance to take a well-earned rest.



Work Done By the Austin Cube Mixer

Many good ideas can be secured from pictures of machinery of any kind actually in operation, especially if the work that is shown is some well known proposition that required a large amount of machinery placed as economically as possible.

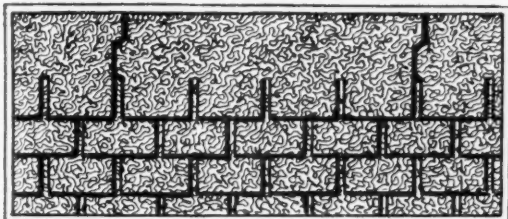
Such information is contained to a large degree in the catalog of the Municipal Engineering & Contracting Company. This catalog describes the various sizes and styles of Austin cube mixers and shows an unusually interesting series of photographs of these mixers in operation on work of unusual size or of unusual difficulty where high grade concrete had to be secured.

For instance there is one illustration with a description

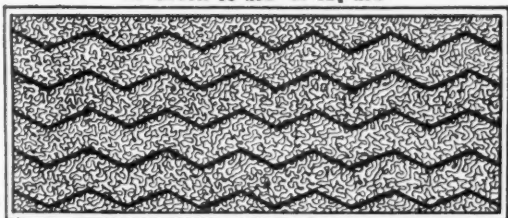
(Continued to page 106.)

Vulcanite

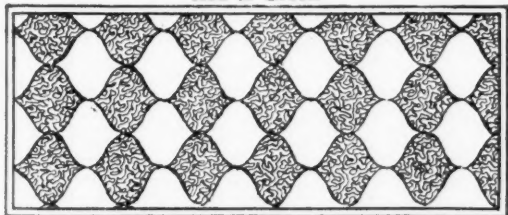
Ornamental Roofing and Shingles



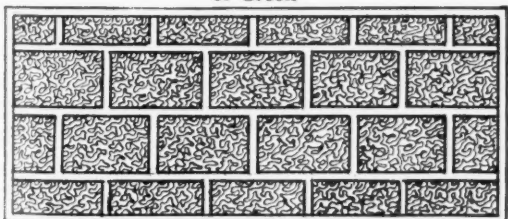
Vulcan Slab Shingles Self Locking in Red or Green 10"x32" or 12½"x32"



Vulcanite Strip Shingle Style B Either in Red or Green



Vulcanite Mosaic Style H Two Colors Red or Green



Vulcanite Mosaic Style K Two Colors on One Roll

For permanency, durability, beauty, economy, fire and weather protection, they have no equal.

Heretofore, lack of something better has necessitated the use of wooden shingles, in spite of the fact that they crack, warp, draw the nails, and burn up like tinder.

But now, **Vulcanite Roofing** furnishes a material that perfectly combines the qualities of safety, comfort and beauty at so low an initial cost as to prohibit such a flimsy, highly combustible and temporary covering as a wood shingle Roof. **Vulcanite** roofing outlives wood shingles, two to one. Twenty years' service is a reasonable expectancy.

And you can obtain a most pleasing variety of effects in colors and designs. **Vulcanite** comes in rolls and shingles in several patterns that can be worked into any number of artistic finishes. The colors will withstand sun and rain for any length of time. They are as permanent as the granite itself from which they are made.

*We would like to send you our catalogs and samples; and show how you can use **Vulcanite** to boost your business, and increase your profits.*



Patent Vulcanite Roofing Company

CHICAGO, ILL.

showing one of the Austin cube mixers at work on the Los Angeles viaduct. As stated in the description, this work comprised six storage reservoirs and 217 miles of conduit. A special cement mill was built for manufacturing more than one million barrels of cement that were used. The description states that all the concrete on this enormous job was mixed by Austin cube mixers. Over 100 were used all together.

There are also several pictures of these mixers in service at the Panama Canal.

They were used in mixing the concrete at the Detroit River tunnel where 101,900 cubic yards of concrete were deposited under water and where the hazard of placing the concrete demanded the very highest quality of mixture under inspection that was very severe and exacting.

The specifications for the various sizes of Austin cube mixers will also be of interest to the contractor and builder.

Copies of this catalog can be secured from the Municipal Engineering & Contracting Co., Railway Exchange Bldg., Chicago, Ill.

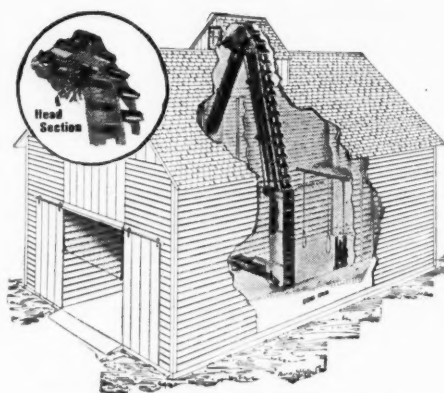


Economy in Corn Crib

The economy in corn cribs should be considered both with regard to the construction and the operation of the elevator after the construction is completed. The cost of construction will depend on many of the smaller features of the crib and also on the simplicity of the elevator with its effect on the time and cost of installation. The operating cost will depend on the amount of power needed and the cost of upkeep of the elevating machinery.

Several reasons are given by the Portable Elevator Mfg. Co. for the low cost that is secured by planning for and operating a "National Giant" inside cup elevator.

With a crib 28 by 40 feet or less with a half pitch roof, the makers say that no cupola is necessary, which will reduce



"National Giant" Cup Elevator in Crib.

costs. A very small cupola is needed for sizes larger than this or for flatter roofs. No pit is needed which is a feature tending to reduce expenses.

The makers say that a very small amount of power is required to operate their elevator because of the few parts and consequently low friction.

The illustration shows the installation of one of their elevators.

The Portable Elevator Mfg. Co., Bloomington, Ill., also have a book of granary plans that contain many suggestions that will be of value to the builder. Copies of this and also of their catalog showing the styles of elevators handled can be secured on request.



New Office for the "Standard"

A sales office for "The Standard" low charging concrete mixers and equipment has been opened at Detroit, Mich., by the Michigan Scale & Supply Co., 82 Woodbridge St., who will be direct representatives of The Standard Scale & Supply Co., in the sale of scales, concrete mixers, hoists and equipment for the contractors.

(See how this 10 ft. panel stands straight without bending. Send for actual photo.)

USE
WATERPROOF
PLASTERGON
TREATED
WOOD FIBRE
WALL-BOARD
Because

it is wood fibre converted back into solid lumber by our exclusive chemical process.

Plastergon looks, feels and works like lumber. It is hard—stiff—and has the strength of lumber.

• Requires absolutely no further sizing. This special feature alone saves \$4.00 to \$6.00 per M square feet in cash, besides time. Being completely waterproof, it doubles this saving in ultimate reduction of upkeep.

• Will not warp, twist, buckle or wave under any working condition or climatic change. Send today for samples—test them. Know this better board and make better profits at once. Write now.

Plastergon Wall Board Co.
1 Philadelphia Ave., Buffalo, N. Y.

Send for Booklet
— on this —
CAMP COTTAGE

An ideal vacation bungalow. 32 ft. x 13 ft. 4 in., three rooms, screened openings, wood floors and frame work, crushed slate composition roofing and side walls of beautiful, durable

CAREY
Ceil-Board
SUPERSEDES PLASTER FOR WALLS AND CEILINGS

You can buy the materials from your local lumber dealer for about \$140. That customer of yours who likes to take his family camping beside the near-by stream, lake or mountain will be delighted with this opportunity to get a real, livable cottage at a price he can afford to pay. Your profit will be generous.

Write today for our FREE BOOK, giving details and telling how to get these plans, specifications, bill of materials, etc., without cost. Just say, "Send me the Carey Camp Book FREE."

The Philip Carey Company
1021 Wayne Ave., Lockland, Cincinnati, Ohio

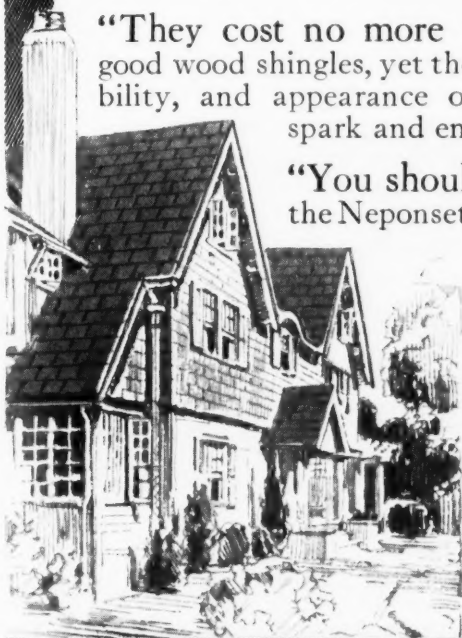
"This is a good shingle to hang around; yes, sir.

"It may not be a desirable article to spank Horace with, but that's the only thing the wood shingle has on it.

"It is making me prosperous; my life is just one Neponset Roof after another. Every customer becomes my salesman; that's why there is in this town, an increasing number of handsome red, gray and green roofs of



NEPONSET SHINGLES



"They cost no more when laid, than good wood shingles, yet they possess the durability, and appearance of slate—they are spark and ember proof.

"You should try to become the Neponset Man in your town.

Send the coupon for Free Samples, booklet, prices and full particulars."

Bird & Son

(Established 1795)

East Walpole, Mass.

CHICAGO

1434 Monadnock Building

Canadian Office and Plant
Hamilton, Ont.

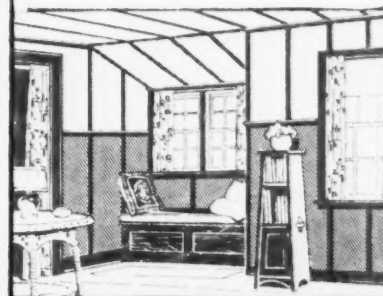
NEPONSET WALL BOARD

For Walls and Ceilings

like Neponset Shingles, sings for itself; one order brings another.

The carpenter who handles it is provided for the rainy days, with indoor work.

To recommend it for ceilings, walls, paneling, wainscoting, etc., instead of plaster and lath, stamps you as an up-to-date man who keeps closely in touch with twentieth century progress.



BIRD & SON, Dept. C, East Walpole, Mass.

Please send me free samples of Neponset Shingles, and Neponset Wall Board, with booklets, particulars, etc. Also a copy of your book, "Repairing and Building." This request does not obligate me in any way.



Name

Address



MAIN STREET'S BRIGHT SPOT

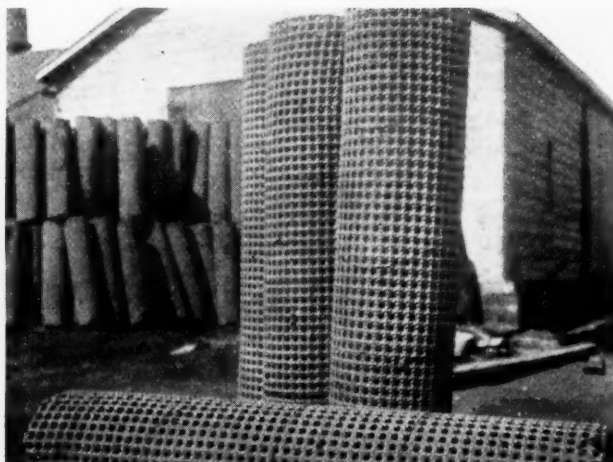
- ☞ Bright surroundings make people feel gay.
- ☞ Gayety is what playgoers are looking for.
- ☞ Attract the crowds by trimming the theatre you intend building with cheery Midland enamel terra cotta.

MIDLAND TERRA COTTA COMPANY

1515 LUMBER EXCH.
CHICAGO, ILLINOIS



WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER



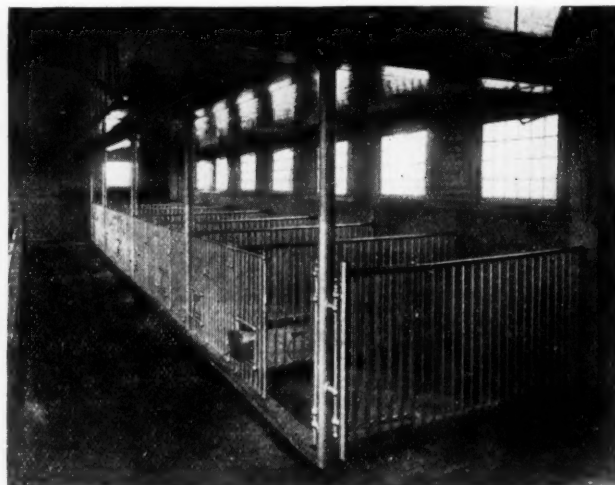
Showing Composite Metal Lath in Rolls Ready for Shipment. This is a Combination of Wire and Brick Clay and is Made by Composite Metal Lath Co., 128 Broadway, N. Y.

✦ Sanitary Calf Pens

In order for a contractor to get barn building work he must have definite information concerning the many different kinds of fixtures that are needed to make a complete plant. If a man is considering building a dairy barn he will give the work to the builder who has a good knowledge of the construction, installation, and use of the many types of fixtures that go into a barn to make it most useful for dairy purposes.

Calf pens, for instance, are most necessary in equipping the modern dairy barn. A builder should have just as definite ideas concerning their construction and the use of the devices that go with them as he has of stanchions and the other better known features of barns.

The accompanying illustration shows a type of calf pen that has many features that will recommend it to men who



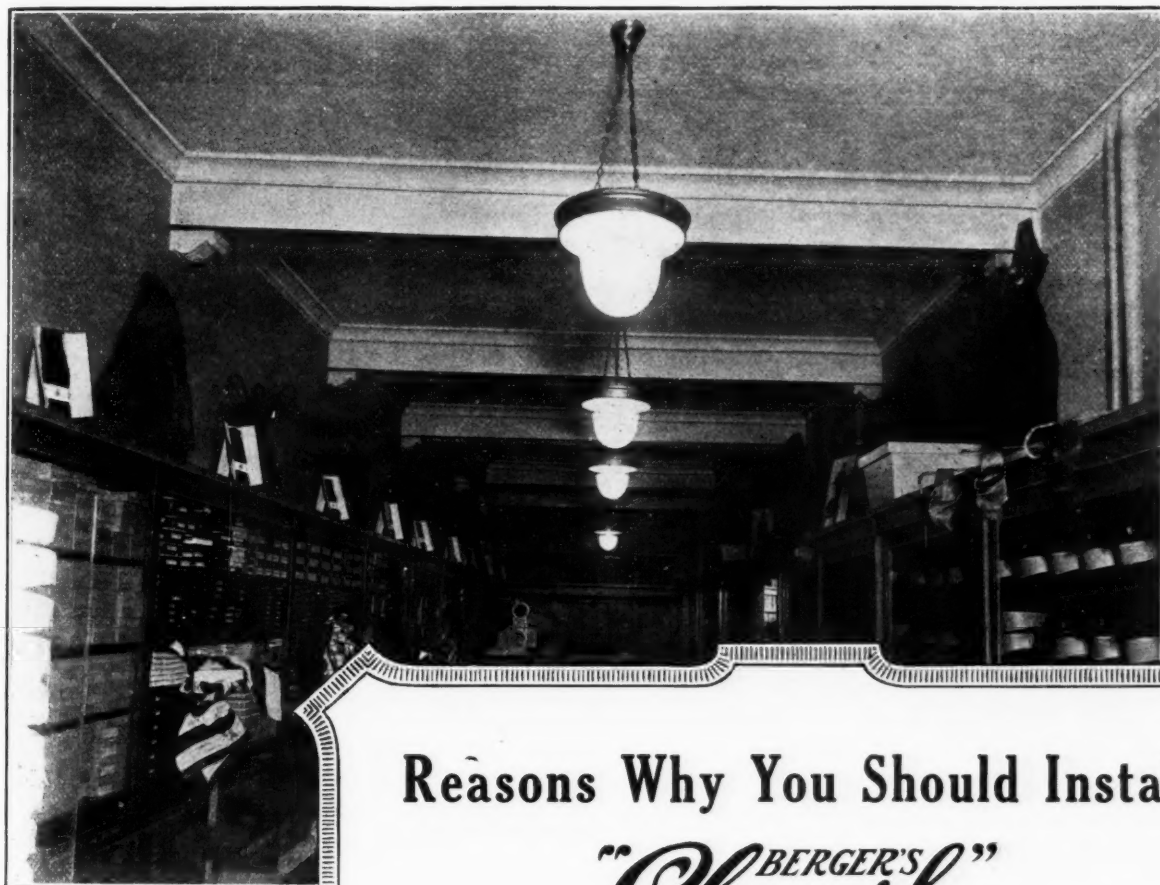
Sanitary Pipe Calf Pens Furnished by Glor Bros. & Willis Mfg. Co.

are considering the construction of dairy barns. It is a product of the Glor Bros. & Willis Mfg. Co., East Main St., Attica, N. Y.

The cast iron tilting manger, that is shown in the first stall, is a feature of their pens. When the manger is not in use it can be tilted out into the alley where it will keep clean. When feeding, it can be tipped back into the pen where it locks automatically so that it can not be turned over by the animal.

The ring shown in the first pen for holding the pail is

(Continued to page 110.)



Berger "Classik"
Steel Ceilings in
Haberdashery Store

Reasons Why You Should Install

"*BERGER'S* *Classik*" STEEL CEILINGS

Beauty—They give an attractive, decorative, embossed finish that compares favorably with expensively moulded plaster. Hundreds of beautiful designs that harmonize with any type of architecture.

Safety—They are fire-retardant and, unlike plaster ceilings, cannot crack, chip or fall down.

Adaptability—They are suitable for any interior—store, home, church, theatre, garage, office, public building, etc.

Ease of Application—They are quickly and easily erected, due to our improved bead and button construction, which eliminates tamping and calking. This saves you 25% to 40% on every job.

Perfect Construction—The dies, from which these ceilings are made, are reproductions of skilfully clay-moulded originals, while the stamping done on our special machines brings out the beauty of design sharp, clear and true. Each unit is rigidly inspected and guaranteed against defects.

Reasonable in Cost—Their first cost, which is moderate, is the only one, as they last as long as the building itself.

Profitable—Each installation means a good profit for you, and at the same time is a perpetual recommendation for future business and profits.

With all these good points in mind, write for full particulars and copy of "Classik" Catalog D. A. B., showing hundreds of designs and many installations. This catalog will help you close many sales.

THE BERGER MFG. CO., Canton, O.

BRANCHES: Boston, New York, Philadelphia, Chicago, St. Louis, Minneapolis, San Francisco

EXPORT DEPARTMENT: Berger Building, New York City, U. S. A.

another convenience. When it is not holding the pail it folds down against the side of the pen out of the way.

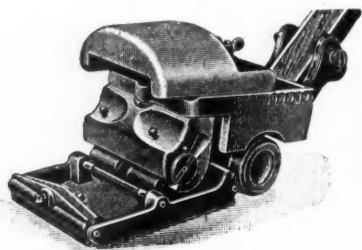
The catalog of the Glor Bros. & Willis Mfg. Co. contains more complete descriptions of this and other features of their line. A copy will be sent on request.



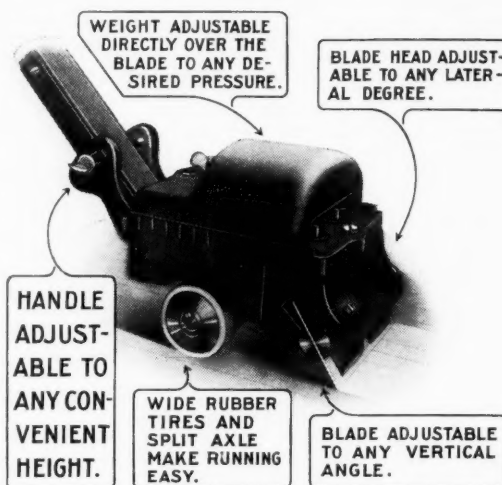
"Did's Money-Back-if-You-Want-It Floor Finisher"

"Did's Money-Back-if-You-Want-It Floor Finisher"—that is the new name for what in the past has been known as the Adjustable Floor Finisher. The manufacturer, Mr. H. P. Didriksen, of 1826 Summit Street, Columbus, Ohio, says the change came about in this way: For several years he had been in the habit of shipping it subject to ten days' free trial, and the fact that in every case where the machine had been given a fair chance to speak for itself it had been invariably kept and very cheerfully paid for by the prospective buyer, led Mr. Didriksen to the belief that the machine was worthy of a broad and liberal guaranty.

In consequence he advertised it under this remarkable guaranty: "If at any time or for any reason thru fault of the machine you are not well pleased, you may have your money back if you want it." Of course no ordinary machine of any kind would justify so broad a guaranty as that, but Mr.



Surfacer Arranged as a Sander.



H. P. Didriksen's Scraper.

Didriksen had the utmost confidence in his machine, knew that it had unusual merit and felt that it would stand up under the most exacting tests and still make good under that guaranty.

That he was correct in his judgment is shown by the fact that out of all the thousands of these machines which he has shipped subject to that guaranty, there has been but one case where a refund has been asked and in that case the owner had no further use for such a machine.

So Mr. Didriksen now feels that the name of the machine should convey some definite idea of the guaranty under which the machine is sold, and it will hereafter be known as "Did's Money-Back-if-You-Want-It Floor Finisher."

Get This Book!



Be a Waterproofing Contractor

Contractors who are prepared to do waterproofing and floor hardener work make BIG MONEY.

This fine, new catalog, just off the press, tells the When, What and How of Waterproofing, Damp-proofing and Floor Hardener work for all classes of construction.

Every contractor should have a copy of this valuable reference book. Sent free on request—write today!

Ceresit Waterproofing Company
910 Westminster Bldg.

CHICAGO



Why Your Choice Should Be Kuhn Patent Tongue and Groove Flooring

IN figuring material you can't afford to slight the hardwood floors. The satisfaction which goes with the smooth, even surface and the long-continued wear of every Kuhn Patent Tongue and Groove hardwood floor you lay brings the home-owner's commendation and more business for the contractor. And there is a greater profit for you in every job laid with Kuhn Patent Flooring.

Easiest to Lay



The Right Kind



The Wrong Kind

Notice the difference between the Kuhn Patent Tongue and Groove and the common kind. The Kuhn Tongue is longer and stronger and reinforced on the underside which prevents it from breaking off when nailing. At the same time the bevel makes the flooring draw up more tightly than the ordinary kind and prevents upper lip from breaking. Your men can lay more of it in a day. Adds to your profit.

Long Lengths

Eighty per cent of Kuhn Flooring is in lengths of eight feet or over. There's not a single strip shorter than four feet, and the average of the twenty per cent between four and eight feet is well above six feet.

You, who have probably often paid for the extra labor of finishing floors of short lengths, know what an added profit our long length flooring will give you.

No. 15, 1 3/4 in. C. C. flooring brads are used in laying.

Face Surface Measurements

When you buy 3/8-inch flooring with a 2-inch face, you pay for 2 1/2-inch width of flooring—25% added for the tongue which is lost in laying. When you select Kuhn Patent Tongue and Groove Flooring, you pay only for actual width of the face of the strip.

This saving is another addition to your profits.

Face Absolutely Free From Defects

Every strip of Kuhn Patent Flooring is critically inspected for defects of any kind; all sap, knots or streaks are discarded. Kuhn Flooring is also most carefully sorted for color and only the even colored strips are included. Every inch of Kuhn Flooring can be used—no waste. Still more profit for you.

Accurate Membering

The Kuhn Patent tongue and groove are cut on special flooring machines, which insure accurate membering of pieces. It always fits. Frequent micrometer tests keep the thickness always at exactly three-eighths of an inch and the width of the face at two inches.

Free Flooring Book

full of information about hardwood floors, the making, laying, finishing and care. Suggestions of value even to the most expert builder, contractor, or home-owner. Get your copy now.

THE INTERIOR HARDWOOD CO.

1313 Beecher Street

Indianapolis, Ind.

Our flooring gives utmost satisfaction to the home-owner as well as biggest profit to you, because through every process, from the forest to your "job," it is given the same careful handling and treatment. We use most improved machinery for manufacturing our flooring. Our workmen are all thoroughly skilled and competent. Our years of experience have brought us to the most approved methods.

Seasoning

The lumber is yard-seasoned for at least one year and kiln-dried for 30 days before manufacturing and the finished product kept dry in heated warehouses. No swollen tongues in Kuhn Patent Flooring—no split faces.

Kuhn Patent Flooring is made in

| | |
|--------------------------------|----------------------|
| Quarter Sawed White Oak | Dark Mahogany |
| Plain Sawed White Oak | Black Walnut |
| Plain Sawed Red Oak | Dark Cherry |
| Hard White Maple | Dark Oak |

Our location in the center of the choice hardwood district gives us every advantage for the very cream of quality in these woods, as well as for price and prompt deliveries.

We are also manufacturers of a complete line of beautiful Parquet floors, Borders and Wood Carpet of the very highest quality.

Before making another estimate for hardwood flooring of any kind, mail the coupon or a postal for our

The Interior Hardwood Co.,

1313 Beecher St., Indianapolis, Ind.

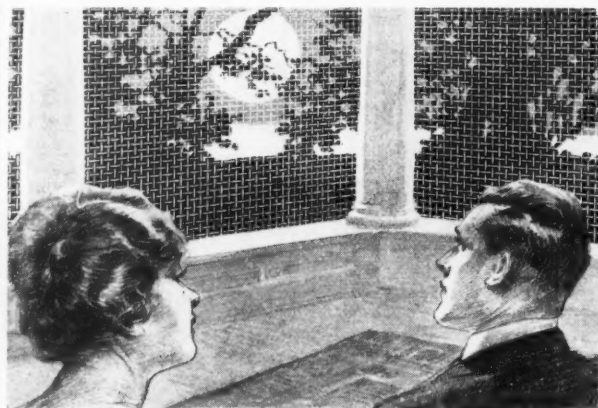
Send me without obligation, your free Flooring Book and information about Kuhn Patent Tongue and Groove Flooring.

MAIL COUPON TODAY

Name _____

Address _____

Town _____ State _____



There Is No "Just As Good" As G. & B. PEARL Wire Cloth

THE wonderful durability of G. & B. PEARL Wire Cloth as well as its beauty is due to its metallic coating. The composition of and method of applying this coating is exclusive with us and used *only* on genuine PEARL. So—when a dealer offers you something "just as good as PEARL"—he is *mistaken*. It isn't so. There can be no "just as good."

We've thousands of dealers—there's one in your vicinity. Let us give you the name of the hardware merchant who can supply you with genuine G. & B. PEARL. He is *worth* getting acquainted with.

For
Permanently
Screening
Doors, Win-
dows and
Porches

GILBERT & BENNETT
Pearl
WIRE CLOTH

Made in
Two Weights
Regular
and Extra
Heavy

The day you screen with G. & B. PEARL you end trouble and expense. No painting—no repairing—PEARL lasts and satisfies. It is the handsomest screen and the cleanest as well as offering least obstruction to the vision.

Look for two copper wires in the selvage and the Round Tag bearing our name on each roll.

They identify the genuine article, and for the sake of screen satisfaction they are worth looking for and insisting on.

There's a hardware dealer in your vicinity who sells PEARL. Drop in and see him. Or—write our nearest office for his name, samples of G. & B. PEARL and descriptive literature.

The Best Hardware Dealer in Your City Sells "PEARL"

Write for Free Samples and Booklet
Address our nearest office

The Gilbert & Bennett Manufacturing Co.

(Established 1818)

Dept. A, 277 Broadway, New York Dept. A, 38 S. Dearborn St., Chicago
Georgetown, Conn. Weyton, Ill. Kansas City, Mo.

New Sales Offices of the Kohler Co.

The Kohler Co., manufacturers of Enameled Plumbing Ware, has recently opened new sales offices in the following cities:

Philadelphia, 404 Morris Bldg.—H. J. Hanna, Jr., Manager.
Atlanta, 1410 Candler Bldg.—R. G. Dobson, Manager.

Pittsburgh, 3005 Jenkins Arcade Bldg.—Harry E. Clark, Manager.

St. Paul—725-726 Merchants National Bank Building, Chas. A. McKenzie, manager.

Detroit—1148-1152 David Whitney Building, Bart Downey, manager.

Seattle—308-309 Pantages Building, W. B. Lambert, manager.

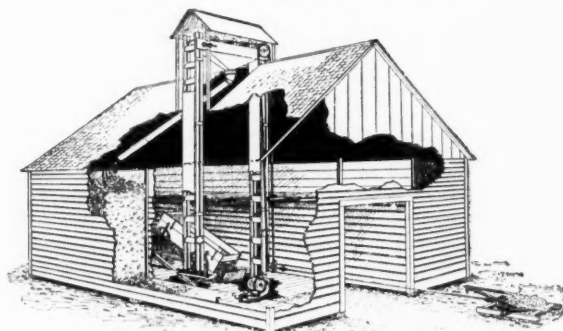
This company, whose factory and general office are located at Kohler, Wis., has for a number of years had branches in Chicago, London, New York, Boston and San Francisco, with warehouses in the last three cities. Rapid growth of the business and the widespread demand for Kohler products has made the establishment of these additional branches necessary.



Speed in Elevating Grain

The contractor or builder should have definite ideas of the advantages of elevating equipment for granaries in order to show his prospective customers the advantages secured by the installation of a power cup elevator. The saving in time with the resulting saving of money are points that will concern the man most who is considering the installation of machinery of any kind.

It has been proven by past experience that it will cost from one-half to one cent less per bushel to have your corn picked if you have a "Meyer" cup elevator than if no elevator is available. The grain can be handled as fast as it is brought



A. F. Meyer Corn Crib Equipment.

from the field, which makes it possible to cut down the number of men and teams needed and also the time that is needed to get the crop in. All these savings in men, teams, labor, and time indirectly mean a saving in money.

The arrangement of the dump in "Meyer" inside cup elevators is a convenient feature. The wagon is merely driven on to the dump and a lever is pulled. The weight of the wagon does the rest. The grain goes into the boot and is taken to the cribs or bins by the steel buckets.

The type shown in the accompanying illustration has the carriers placed on each side of the driveway. The A. F. Meyer Mfg. Co. also make styles with the carriers built together on one side of the driveway. A style can thus be chosen that will suit the prospective owner.

This company is offering a fine opportunity to men with protected territory. We would suggest that our readers who are interested in granaries write to them for their crib plans, catalog, and description of their offer. Address the A. F. Meyer Mfg. Co., Morton, Ill.

But the word
has lost its
terror for the
builder who
paints with

Pyrolin

Fire-resisting
Pure Linseed
Oil Paints

**"Pyrolin" Final Tests Have Just Been Completed by
Authorities—Results Far Better Than Expected—
Follow These Advertisements for Positive
Proofs of Pyrolin Fire Protection**



Pyrolin is of immense importance to the contractor. It not only means the protection of his buildings against fire, but it also means the reinstating of wood as the primary building material.

Only Building Left Saved by PYROLIN

Mr. E. L. Cavanaugh, Clare, Iowa, writes the following letter:

"In 1906 we had our implement building at this place painted with the PYROLIN Fire Proof Paint, which gave satisfactory results so far as appearance, covering capacity and durability are concerned.

"We had no test of its fire-resisting qualities until December 11th, 1911, when almost the entire business portion of the town of Clare was destroyed by a severe conflagration. Our implement building was just eight feet from the nearest building in the direct path of the flames, which beat against the side of our building. The fire was so hot that it did not seem possible it could be saved. The woodwork charred and blackened but the flames did not carry, and the building was saved and the fire was stopped. We are using the building every day."

And his experience is only a repetition of daily tests to which Pyrolin is subjected.

Send for our Booklet. It will explain to you the tests of the U. S. Government; the advantages of Pyrolin as a paint, and the money and peace of mind it will save you as a fire-resistant. Write today for your copy.

PYROLIN PRODUCTS CO. FORT DODGE IOWA

Exclusive Western Agents for
**McCLOSKEY VARNISH CO.'S
SUPERIOR VARNISHES**

The Varnish of satisfaction. Get our prices before buying. Our Water-proof Varnish is the finest in the world.

Pyrolin
Products
Company,
Fort Dodge, Ia.

Gentlemen:
Kindly send me
your Pyrolin catalogs.

Name

Address

Waterproofing on the Farm

Concrete has obtained an enviable position in construction work on the farm. Troughs, tanks, cisterns, barn floors, feeding floors, cellars, foundations of all kinds, and many other parts of buildings and also complete buildings are being constructed of concrete. There is so much of this work going on that it will pay contractors and builders to get all the information they can in order to insure the highest quality of work.

One of the phases of concrete work on which the builder has little information, as a rule, is waterproofing. A most complete booklet on this can be secured from the Sandusky Cement Company, entitled "Waterproofing on the Farm."

Many good photographs show the application of concrete to all kinds of farm construction and there are also short descriptions of the use of waterproofing in the different kinds of concrete work. The illustrations are large enough and clear enough so that many good ideas can be obtained concern-



Reproduction of Attractive Booklet Cover.

ing the arrangement and construction of the different buildings, floors, troughs, etc., that are needed on a modern barn.

All this valuable information is arranged in a pleasing way and the appearance of the booklet is shown in the illustration. A copy of it should be in the files of every builder that is interested in farm construction of any kind.

A copy will be sent to any of our readers by the Waterproofing Department of the Sandusky Cement Company, Cleveland, Ohio.



New Address of The American Saw Mill Machinery Co.

Believing that they will be in better touch with the markets of the world, both in selling and purchasing, the American Saw Mill Machinery Company has removed their sales and purchasing departments from Hackettstown, N. J., to 50 Church St., New York City, N. Y.

All communications should be sent to this address to insure prompt attention. The American Saw Mill Machinery Co. have had an office at the above address for a number of years, handling their eastern and foreign business. Adjoining space has been secured and all thrown into a fine suite of offices especially arranged for handling their business.

Customers visiting New York City are cordially invited to make these offices their headquarters while in the city.

The address: American Saw Mill Machinery Co., 50 Church St., New York City, N. Y., is one of the easiest to reach in the city, as it is located in the Hudson Terminal Building reached by all Hudson River Tubes and convenient to all elevateds and subways.

"Trouble-Saver" Scaffolds

Pay for themselves from the money saved on the first two jobs.

Did you ever figure up the money you lose in building old wooden scaffolding; the nails and lumber wasted, and your men's time lost (a half day in most cases).

Compare this expensive method with the slinging of the "Trouble-Saver" Scaffolds.



No nails to drive—no bothering with bolts or screws. The "Trouble-Saver" is simply hooked around a studding. Ten minutes' work.

And the "Trouble-Saver" won't break; can't slip; stays absolutely rigid until taken down.

We are offering a 30-day Free Trial to carpenters just to prove that these Scaffolds are really an investment.

Write for our proposition and see how much you can save.

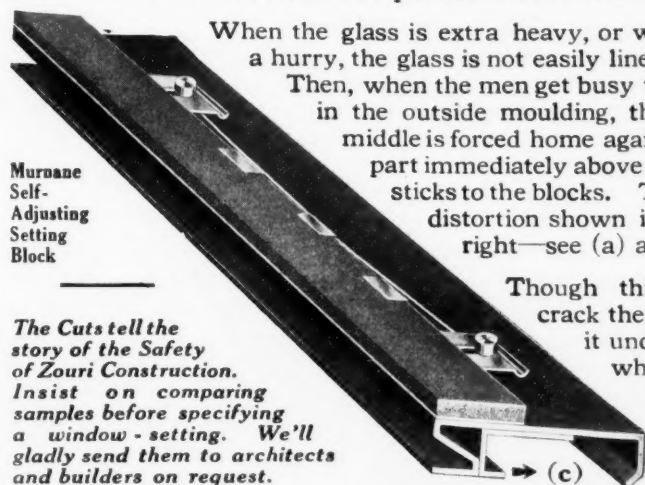
Steel Scaffolding Co.
Evansville, Ind.

Where lies the Danger in Setting Large Glass?

YOUR Client—a haberdasher, say—has a big plate of window-glass, say, 10x15 feet or over, for his new store window. The glaziers lift it, by means of straps, onto two blocks, in position for setting. These blocks are placed about fourteen inches from either end of the plate of glass.

The glass, when set on the blocks, must be kept away from the rabbet far enough to allow withdrawal of the straps.

The glaziers then use chisels to pry the heavy glass into contact with the rabbet, at the points where it sets on the blocks.



When the glass is extra heavy, or when the glaziers are in a hurry, the glass is not easily lined up against the rabbet. Then, when the men get busy with their screwdrivers in the outside moulding, the glass at the ends and middle is forced home against the rabbet, while the part immediately above setting blocks is not. It sticks to the blocks. The result is the kind of distortion shown in the vertical cut to the right—see (a) and (b).

Though this distortion may not crack the glass at the time, it puts it under a dangerous tension which may start a crack whenever a little added stress occurs, such as wind - pressure or vibration.

The Cuts tell the story of the Safety of Zouri Construction. Insist on comparing samples before specifying a window - setting. We'll gladly send them to architects and builders on request.

The Murnane Self-Adjusting Block Does Away with Danger of Distortion

Zouri Drawn Metals Company

1811-1821 East End Ave.
Chicago Heights, Ill.

Please send me sample of Zouri Key-Set Safety Sash.

Name _____

Address _____

The Murnane Self-adjusting Setting Block does away with this danger. The glaziers set the plate of glass on the Murnane Blocks in the usual way, and withdraw their straps. This Setting Block consists of two members. The main support (c) is a rigid piece of metal. Resting on this is a sheet of metal, so constructed as to form an anti-friction bearing, which will move inwardly with the slightest pressure. On top of this bronze sheet is riveted a leather cushion. The glass rests on this cushion. This construction makes it so easy to slide the heaviest plate of glass against the rabbet that perfect, uniform contact is secured the entire length of the glass.

Zouri Drawn Metals Company

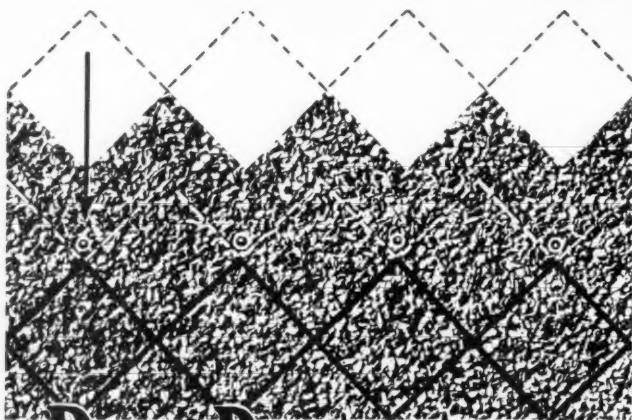
1811-1821 East End Avenue
Chicago Heights, Illinois



This dangerous distortion

is unavoidable when glass rests on stationary setting blocks.

The Murnane Self-Adjusting Setting Block prevents all such trouble and risk.



Roof Protectors

PUT absolute certainty of roof protection into every shingle roofing job. The new Flex-A-Tile Diamond Point Slabs will bear the burden of wear and weather splendidly and help you guarantee a satisfactory job every time.

DIAMOND POINT SLABS

These new patented Flex-A-Tiles are practically four shingles in one. Their unique shape allows you to secure beautiful artistic effects and combinations hitherto unobtainable.

Save 50% in Labor

—38% in Nails—

35% in Freight

No time is wasted in chalk-lining—Diamond Point Slabs automatically space and gauge themselves; only five nails are needed for every four shingles; their shape means less weight and consequently cheaper freight.

Flex-A-Tile Quality

The same thorough, painstaking manufacturing process, the same high quality felts and asphalts, the same natural red and green slate surfacings that always have distinguished Flex-A-Tiles also distinguish Flex-A-Tile Diamond Point Slabs.

Write Us for Details

Liberal sample, prices and complete particulars gladly sent. Just say you want to know all about the new Flex-A-Tile Diamond Point Slabs.

THE HEPPE'S COMPANY

Dept. F, 1010 Kilbourne Ave., Chicago, Ill.

Flex-A-Tile Roll Shingle
No-Tar Asphalt Paint *Utility Board*
Other Guaranteed Heppes Products

Stucco Board for Holyoke Canoe Club

The new club house for the Holyoke Canoe Club, now under construction at Smith's Ferry, Mass., is constructed in the following substantial manner: Bishopric Creosoted Stucco Board is nailed direct to the studding—no sheathing being used—and upon this the cement plaster work is laid. All of the columns also are made out of the Bishopric Stucco Board. The interior surface of the outside walls is likewise Stucco Board plastered, and the inside partitions are of the same construction. The accompanying illustration gives a good idea of what this building is.

The special problem in connection with this club house was dampness. Penetrating fogs and mists had to be ex-



Club House of the Holyoke Canoe Club at Smith's Ferry, Mass. Photograph Shows Bishopric Creosoted Stucco Board Exterior Ready for Stucco on March 20, 1916.

cluded. The Bishopric Stucco Board proved a happy solution of the problem since it is made with a tight waterproof backing. Even if the moisture is able to penetrate the cement plaster coat, it can't go any further.

Any of our readers who are not already thoroly familiar with Bishopric Stucco Board should write the Mastic Wall Board & Roofing Company, 764 Este Ave., Cincinnati, Ohio.

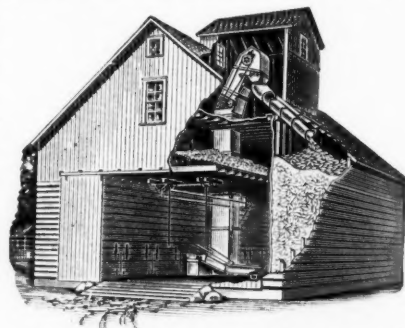


A Complete Line of Grain Elevators

The conditions to be met by elevating equipment in granaries vary considerably. For one reason the type of crop the farmer raises and the amount that is to be handled will affect the selection of the elevator and also the design of the crib.

For this reason the contractor or builder should have a good idea of the different types of cribs and also of the different types of elevating machines that are suited to the cribs. Many times a farmer knows the kind of a crib that is best suited to his needs, but he may then buy an elevator that will be entirely unsuited or inadequate for the use that it was intended for. Problems like this should be handled by the builder. He can suggest small changes in the crib so that the elevating machine will operate successfully or he can suggest a type of machine that will fit the plan.

The information that he will need to give this advice is



Send for Large View Showing All Details of Meadows Elevator.

(Continued to page 118.)



Better Roofs

The wood shingles on these roofs and the Zinclad Nails they are fastened with make the strongest roof combination known. Get Zinclads for every shingling job from your local lumber dealer when buying shingles. Sold only in trade-marked five pound cartons.

W. H. Maze Co.
PERU, ILLINOIS



View of Fine Large Plant of the Meadows Mfg. Co., Pontiac, Ill.

shown to good advantage in the crib plans and catalogs of the Meadows Mfg. Co., Pontiac, Ill. The catalog gives sketches and illustrations showing different types of cribs with different types of elevating machinery installed. The crib plan sheets give several different types of cribs and also have much general information that applies to the construction of all kinds of cribs.

The boot of an elevator has to stand more wear than perhaps any other part. The Meadows Company have taken care of this in good style in their elevator and have made this part particularly strong. As the boot supports the entire weight of the elevator, it is made very heavy with cast iron sides and a steel bottom.

The inner boot is made of galvanized steel that is reinforced so as to be indestructible. The buckets travel between the inner and outer boots in such a manner that there is always one between the boots. The grain cannot therefore cause

clogging by getting back of the buckets.

Builders and contractors can get copies of the Meadows crib plans and also the Meadows elevators from the Meadows Mfg. Co., Pontiac, Ill. We suggest that our readers avail themselves of this opportunity to get some authoritative information on the subject of granaries and the equipment needed to operate them.

✦ The Eureka for Service

The engineers and officials of the Eureka Machine Company, Inc., Lansing, Mich., state that they have designed and built the 5-6 Eureka Batch Mixer as a thoroughly good machine, not as a cheap mixer. And it is a strong endorsement of the superior manufacturing facilities of this organization that the cost of this mixer comes out so modest.

Service is one of the great factors in the concrete mixer

(Continued to page 120.)

Your Business Needs This Kissel Truck

MOST of the trade requires haulage capacities of about a ton.

Here is a truck that measures up to this requirement and is economical in carrying loads.

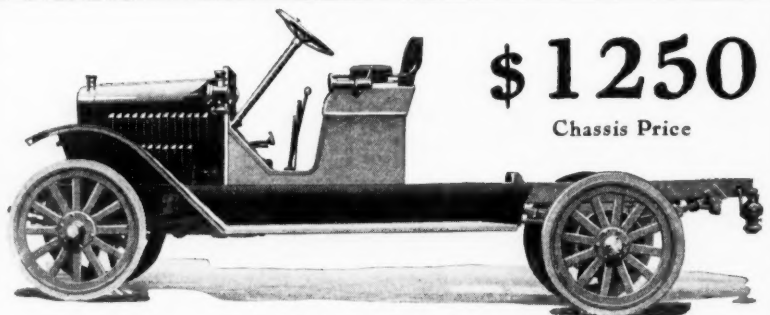
It is the most modern truck on the market—the newest design with worm drive rear axle.

The value of this truck at this price is apparent—Its solid construction is in evidence at every point. Five other sizes. Chassis Prices \$950 to \$4350.

KISSELKAR TRUCKS

Its Kissel-built motor and many other exclusive units are quality features that make the price \$1250 more surprising. Let us tell you more about it. Ask for big truck portfolio.

KISSEL MOTOR CAR CO., 546 Kissel Ave., Hartford, Wis.
AGENCIES AT LEADING POINTS



Built to carry a ton

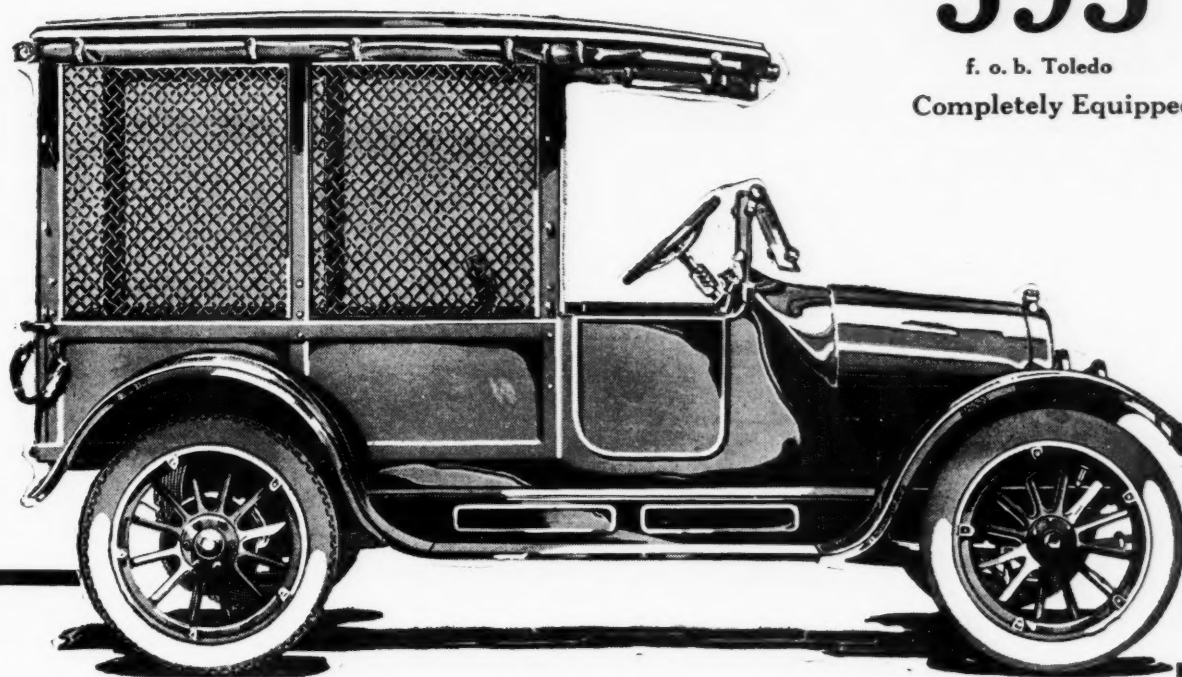


MODEL 75

\$595

f. o. b. Toledo

Completely Equipped



"Speed Up" your work with this Light Economical Overland

This light and speedy Overland is always ready, day or night, for rush work and emergencies.

In construction work of all kinds it gets men, tools and material on the job quickly.

The light weight screen body affords over 78 cubic feet of loading space. Storm curtains all round protect both driver and load in bad weather.

Cantilever rear springs and 4 inch tires reduce road shocks to a minimum.

The efficient long stroke motor gives an abundance of power with a surprisingly light fuel consumption.

Electric starter, electric lights, electric horn, speedometer, ammeter, electrical control buttons on the steering column—all these conveniences and many more, come with the car. There are no extras to buy. And the price is only \$595.

No other delivery car at anywhere near this price gives you anywhere near these advantages.

The Overland is cheaper to operate than a horse and wagon and much more satisfactory.

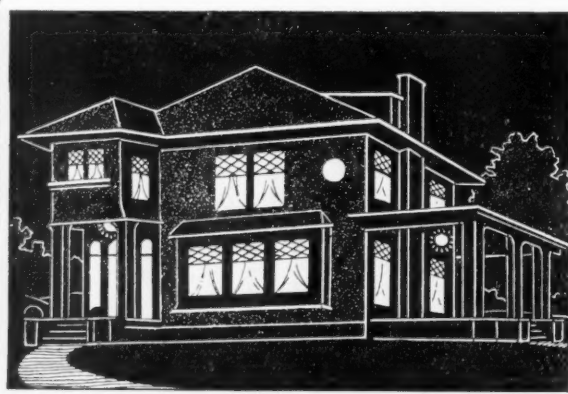
Our dealer will gladly arrange a practical demonstration.

We also supply the Overland Model 83-B—35 Horsepower Panel Body Delivery Car for \$695, f. o. b. Toledo.

Catalog on request. Please address Dept. 669

The Willys-Overland Co., Toledo, Ohio

"Made in U. S. A."



DELCO-LIGHT

Electricity for every Farm, Village and Suburban Home

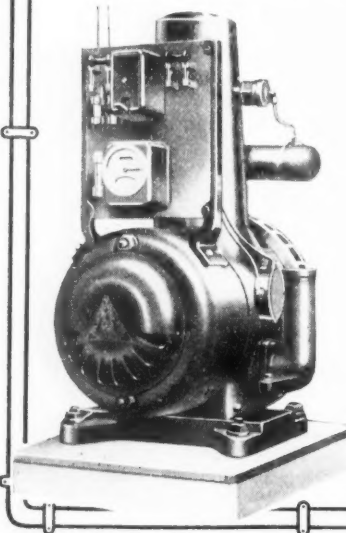
When you are called upon to plan or build a farm or suburban home—no matter where it is located—be sure to include wiring for electric light. Delco-Light makes electricity available anywhere and at such small cost that there is no excuse for anyone being without this greatest of all conveniences.

Delco-Light is a complete electric plant—gas engine and generator in one compact unit.

It will furnish 40 to 50 lights and also furnish power for small machines such as churns, cream separators, etc.

Delco-Light will light the average home for less than 5 cents a day and is so extremely simple a child can care for it.

The turning of a switch starts it—and it stops automatically when batteries are full. Nothing to get out of order or cause trouble.



Delco-Light is manufactured and guaranteed by the same company that has made Delco Cranking, Lighting and Ignition for Motor Cars the standard of the world.

Cost complete with batteries ready to run, \$250

The Domestic Engineering Co.
DAYTON, OHIO

Offices in all Principal Cities

market today just as it is in the automobile market. We favor the car produced by the old established organization and one we can feel assured is going to continue in business and continue to stand back of their product in the way of service, and renewing of parts when required. The same principle applies in buying a concrete mixer. The fact that the Eureka Machine Company have for ten years been engaged in the manufacture of high-grade mixers, is the contractor's assurance that they will remain in business, and give Eureka owners the service to which they are entitled.

The foundation and frame of the 5-6 Eureka Mixes shows a very strong, well balanced, compact construction. It is heavy enough to be rigid under the severest strains. A strong foundation for the drum and power plant is of vital importance. Five inch steel channels, strongly riveted are used for sides, ends, and cross bracing. A heavy plate of steel is riveted to the frame to form the engine floor. The engine is bolted securely to the cross channels.

The mixing drum is constructed of boiler plate steel provided with gear drive. It is a cone-shaped drum provided with comparatively few blades and buckets, and these are of heavy steel construction. A special feature of the drum is the discharge chute which extends into the drum past the center, and makes for very rapid discharge.

In the limited space at our disposal here, we are not able to even mention the numerous other interesting features of this mixer. The manufacturers, however, have recently produced a new illustrated circular giving full specifications of this machine, and this they will gladly mail to any one of our readers who is interested. Address the Eureka Machine Company, Inc., 103 Handy St., Lansing, Mich.



The Mixer that is Making Good for Hundreds of Contractors

There are two big demands on a concrete mixer; first, it must be able to mix a uniform, even batch of concrete no matter what the proportions. Second, the machine must be convenient to use, that is, it must be easy to load, easy to move and dependable at all times under all conditions.

The descriptions of the No. 1 Archer Special, contained in the recently issued catalog, show how the Archer fulfills these demands and why it has been making good for hundreds of contractors.

A feature of the Archer that has been found to be of great advantage by many contractors is the end discharge.

The makers of this machine say that nine times out of ten the concrete can be placed directly in the forms because of this arrangement. The illustrations bear the manufacturers out in this and show various kinds of work with the Archer mixer spouting the concrete directly into the forms.

This feature makes it possible to cut the costs in placing the concrete. Any special design of a mixer which will do this is of interest to contractors and builders.

Some of the illustrations show how easily the Archer mixer can be moved from place to place on the job or to new jobs.

Copies of this catalog will be of interest to all contractors and we suggest that our readers write in for a copy. The address is the Archer Iron Works, 2430 W. 34th Place, Chicago, Ill.



Archer Mixer.



Jeffery Quad owned by the Marston-Gass Lumber Company of Donora, Pa.

How to Buy Haulage

EVERY man in the building trades business must buy haulage—he must buy it as cheaply as he can if he wishes to stay in business and make money. First, he has to decide between horse and motor-truck haulage. That won't take long, if he investigates the real cost of using horses for hauling. Then he must decide between various types of trucks. That, too, is easy if he keeps in mind the one important thing—*when he buys a motor truck he is not merely buying a machine—he is buying haulage at so much a ton or a mile.*

This means that he must consider not only the cost of the truck, but what it costs to operate the truck. He must consider not only how much the truck costs to get, but what it costs to keep year after year. He must consider not only what the truck can do in good weather on good roads, but what it can do in any weather on any road.

If he starts out to investigate these things he will end by buying the Jeffery Quad—just as many other concerns have done.

The Quad is the world-famous truck which drives, brakes and steers on all four wheels—built according to the specifications of army engineers to stand up consistently day after day, under the most exacting requirements ever demanded of road vehicles—the task of keeping up with an

army under actual field service conditions. The duplex governor—the “automatic chauffeur” regulates the power to meet changing road resistance and so conserves the gasoline consumption. The M. & S. Locking Differentials give a positive drive to all four wheels and put the power of the motor into the wheel or wheels that can get traction when the other fail to obtain a grip on the road. The power-on-all-four-wheels principle of the Quad makes it go through hub-deep mud, through sand and snow, over seemingly impassable grades and trails where no rear-drive truck could go.

Many building supply dealers and builders are increasing their business with the Jeffery Quad; it enables them to underbid competitors because of lower haulage costs. Others are increasing their business with it because it enables them to go where no loaded rear-drive trucks can go. Still others are enthusiastic because they never have to suspend work on account of impassable roads when they use the Quad. All of them are enthusiastic because the Quad gives them more and better service at lower cost.

Everywhere the Quad is making an unequalled record—just as it established a new world's record for 2-ton trucks when 3500 Quads were sold in less than two years. For further particulars about the Quad—or about the complete Jeffery line which includes light-duty rear-drive trucks, address The Thomas B. Jeffery Company, Dept. AC6, Kenosha, Wis.

Jeffery Quad

Power on All Four Wheels

Donora, Pa., 11-24-15

L. G. Martin & Son,
Pittsburgh, Pa.

Dear Sirs: Replying to your letter of the 22nd inst. will say that to say that the Quad is doing work that no other truck could do would not be emphasizing at all, in fact since the weather has been bad and the dirt roads soft, we are sending this truck where teams cannot pull a load and several times it has pulled a two-wheel-drive truck and load out of the mud together with the load on the Quad. On receipt of your letter I asked the driver, who is a practical automobile man, if there was any kick coming on the truck, and he said: “If there is, I can't find it.”

Yours very truly,
Marston-Gass Lumber Co.
Per C. F. Gass.

Kahn Pressed Steel Products

A most interesting and instructive book dealing with the uses and advantages of pressed steel construction has recently been completed by the Trussed Concrete Steel Company.

The illustrations are numerous and remarkably good and show the application of pressed steel I-beams to all kinds of construction. This type of construction seems to fit in with nearly all conditions. The illustrations show the beams supported by masonry walls, concrete walls, and structural steel. From the letters that are quoted all these conditions have been met with marked success in this construction.

The hollow air spaces of Kahn pressed steel construction in floors and partitions serve as excellent insulators which is a most necessary feature in apartment houses, hotels, office buildings, schools, etc.

A feature that is of special interest to the contractor, builder, or architect is the development of standard connections for the different types of work. These connections make for speed and the minimum amount of labor and difficulty in erecting buildings of this material.

Our readers should be familiar with pressed steel construction as its use will enable them to increase the amount of work they are handling. Copies of this booklet can be se-

cured from the Trussed Concrete Steel Co., Dept. H44, Youngstown, Ohio.



Metal Ceilings Make Handsome Rooms

Metal ceilings were formerly used in churches, stores, halls, theatres, and buildings of this type, but their use has been very largely extended to private residences lately. This is due to the developments that have been made in furnishing styles that are suitable for this work. The result is that the



An Attractive Dining Room Covered with Edwards Metal Ceiling and Side Walls.



Interior of the J. R. Griffin Clothing Store, Cullman, Ala., Showing an Edwards Pressed Steel Ceiling. Note the Beautiful Beam Effect.

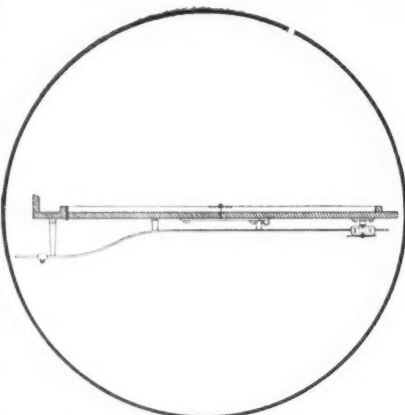
field open to the man in the metal ceiling business has been increased to a very large extent.

The new catalog of Edwards metal ceilings shows the opportunities of this field in a striking way. The many designs and types of installations shown give a general idea of the scope of this field.

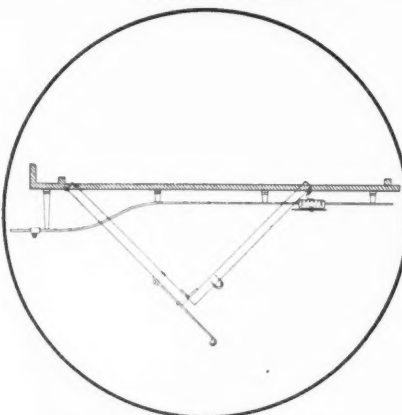
(Continued to page 124.)

Topping's Folding Garage Door Hanger

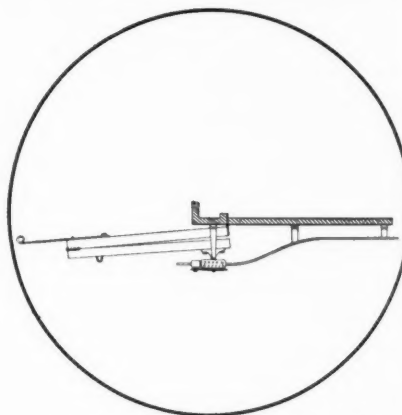
Patent Pending



Section Thru Doors, Closed



Doors Swung Out Partly Open



Doors Fully Open and Out of Way

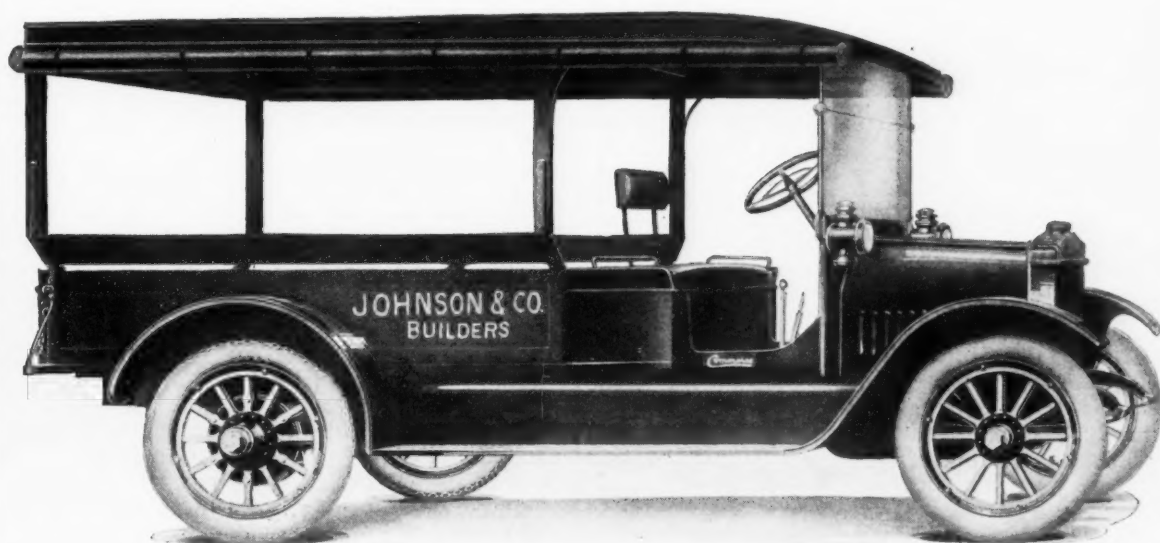
Can be used in single or double sets, and its simple design, combined with ease of operation and ability to withstand rough usage, make it a practical outfit.

You do not have to purchase a garage holder with this outfit, for its movable stop and lock permit of the doors being held full open, half open or any set position the operator desires without further attention on his part. There is an easily operated adjustment on the hanger to care for any sag which may come in the doors after years of use.

Simple, Practical, Durable. Write for trade prices now or ask your dealer.

SAFETY DOOR HANGER COMPANY, Ashland, Ohio

"We make nothing else but Door Hangers"



The Cost of a Man— and a Commerce Truck

is no more than the cost of a man and a truck that does half the work. The COMMERCE TRUCK means ECONOMY when buying, means ECONOMY in up-keep, means ECONOMY in service, means a PROSPEROUS showing.

Let the COMMERCE truck talk for you as your deliveries are being made—GET your material on the job in time—INCREASE the productiveness of your men.

The COMMERCE is built to stand hard usage—to climb hills—to give long service, and over 8,000 satisfied users in the U. S. testify to its productive value. Your material is fully protected by dropping the curtains. Loading space is 84 inches by 44 inches by 54½ inches. Made in three other types.

The interest on the investment in this truck is less than 20 cents per day—the PROFIT on this investment will cover the cost many times.

FULL INFORMATION for the asking.

Write for catalog or come in and see us.

Commerce Motor Truck Co. of Illinois

2015 South Michigan Avenue, Chicago, Ill.



*Residence Edward Lowe, Grand Rapids, Mich.
Winslow & Biglow, Architects, Boston*

For the Best Buildings—

Whether it is a fine residence, hotel, restaurant or public institution where the most efficient refrigeration is demanded, **McCray Refrigerators** are usually selected. The McCray Patented System gives them unquestioned superiority.

McCray Refrigerators

You can select from a large variety of ready built sizes to meet any need or you can have special sizes built to order to fulfill any requirement. In the better homes **McCray Refrigerators** are built into the kitchen or pantry with outside icing arrangement and conform to floor plan and interior trim.

Plan Service Free

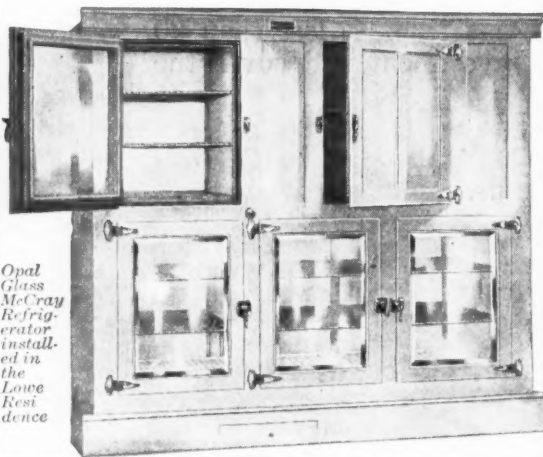
We maintain a special draughting department where we co-operate with architects and builders and furnish ideas and suggestions for any type of refrigerator equipment.

Get These Catalogs and Complete Your Files

*No. 92—Regular Sizes for Residences No. 61—For Meat Markets
No. 50—For Hotels, Clubs, Institutions No. 70—For Grocers
No. 74—For Florists*

McCray Refrigerator Co., 660 Lake St. Kendallville, Ind.
New York: McCray Bldg., 7-9 W. 30th St., Chicago: 1000 S. Michigan Ave.

Agencies in all Principal Cities



*Opal Glass
McCray Refrigerator
installed in the
Lowe Residence*

The Edwards Manufacturing Company claim several advantages for metal ceilings and side walls. They are economical, as the first cost is small, and, if proper care is taken, there will be no subsequent expense for repairs. They are very easily kept clean and are fire, moisture, and vermin proof. Being of light weight, they reduce to a minimum the strain on joists and other parts of the house frame.

This company have an agency proposition that should interest many of our readers. Details of it can be secured by writing the Edwards Mfg. Co., 401-417 Eggleston Ave., Cincinnati, Ohio.

Here is an opportunity for wide-awake men to get some of the extra business in their territories. The metal ceiling and wall business is one of the coming features of construction of all kinds in all parts of the country.



**Metal Ceiling and Side Wall Design
For Bath Room.**



Stanley Garage Door Holder

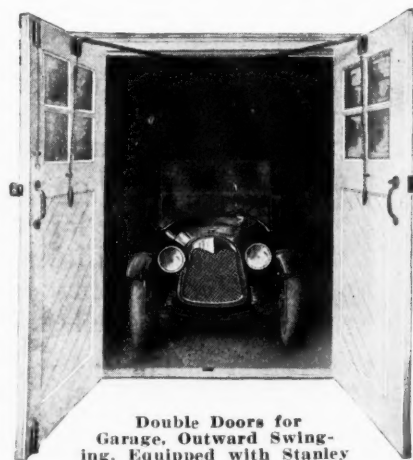
The owner of an automobile knows the danger of having the wind suddenly bang the open garage door shut, smashing lamps or causing other damage. A door holder on the garage serves as inexpensive automobile insurance, saves time in getting the car in and out, and adds greatly to convenience while working in and about the building.

The Stanley No. 1774 garage door holder is a mechanical footman that never gets tired and never forgets. It is universal in application, is easy to put on, and can be used for either right or left hand door without any change whatsoever. Remarkably strong and simple in construction, it has but few parts. There is a rigid arm of U-shaped steel with attaching plates of heavy gauge and large size, applied at sufficient distance from the hinge joint so as to develop the maximum of holding power. The garage door holder is packed one pair to the box, with holding screws carefully selected to be of the proper strength. The length of this device is 30 inches and the net weight per pair is 8 lbs. Of interest to many is the fact that this door holder can easily be adapted for curve top doors.

The Stanley Works, being the largest organization in the world devoted to the manufacture of wrought steel hardware, special factory advantages are available in the manufacturing of these products.

A copy of the new Stanley Garage Hardware Catalog, which

(Continued to page 126.)



**Double Doors for
Garage, Outward Swinging,
Equipped with Stanley
Works Hardware.**

Free Plans

Don't figure on any crib or granary without consulting our Free Plans. They will show you how to get greatest capacity at least expense by installing MEADOWS INSIDE STATIONARY CUP ELEVATORS.

The picture at the bottom shows a 40-ft. crib. The Meadows Elevator angles off and follows the rafters, thus allowing full capacity of the building. The cupola need not be as large as shown in picture; and cribs 36 ft. or less in length with half-pitch roofs require no cupola.

No pit is necessary for dumping grain. Just a hole 16 inches deep into which boot of elevator is set. The elevator is confined to one side of the driveway, and the wagon jack is entirely overhead, fastened to the joists.

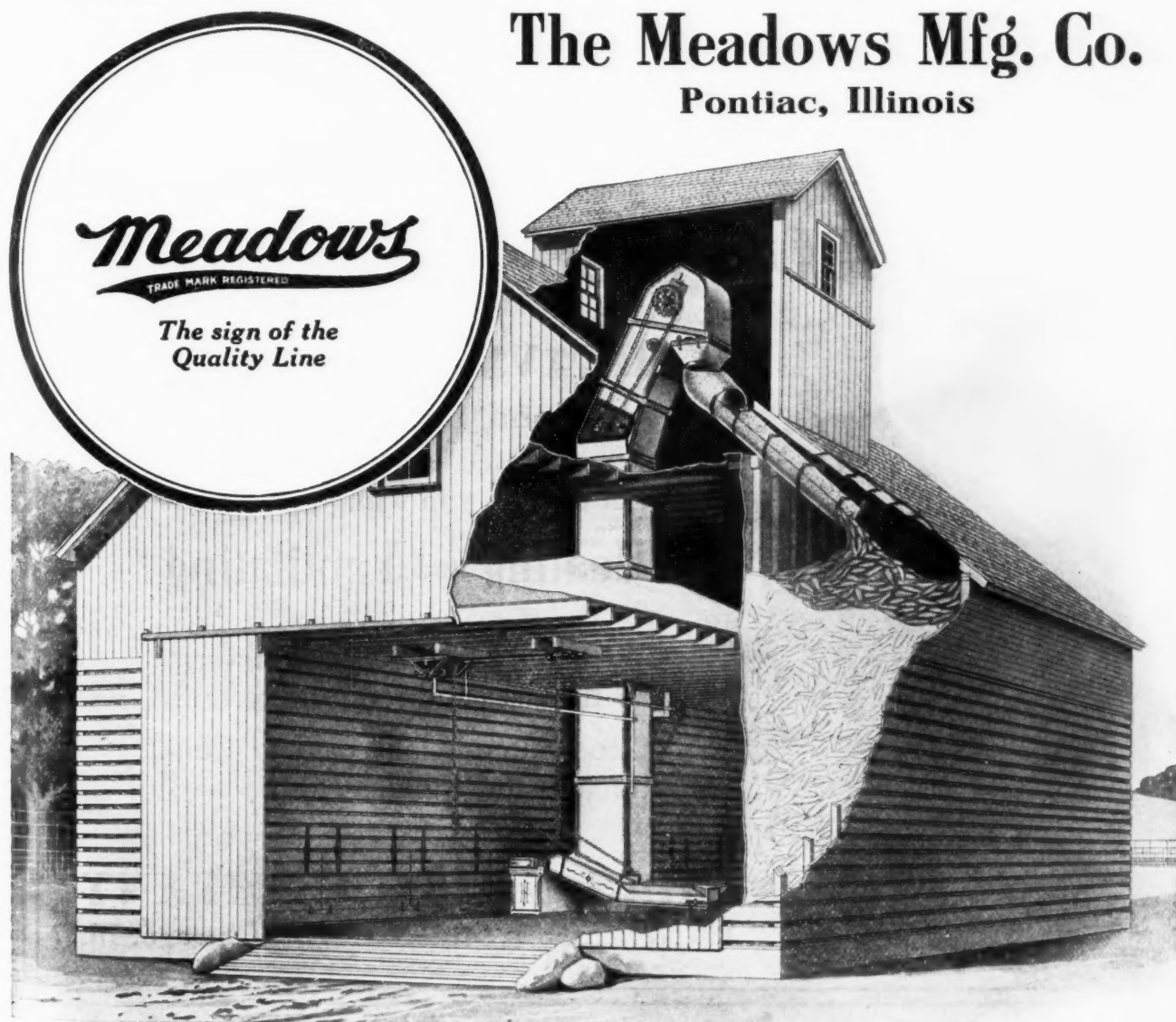
The time has come when every crib or barn means an elevator; and to every contractor an elevator should mean a "MEADOWS." Our trade-mark is a positive assurance of best material, skilled workmanship, and the incorporation of only those ideas which years of experience have proved practical.

With our plans, you will be able to show the farmer how he can save at least forty dollars a year on his corn crop alone; how the Meadows Elevator will pay for itself in less than two years' time.

You will be able to figure more definitely as to space, foundations and lumber.

Write today for these plans.

The Meadows Mfg. Co.
Pontiac, Illinois



WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER

is unusually complete, will be sent free to any builder addressing the Service Department of the Stanley Works, New Britain, Conn.



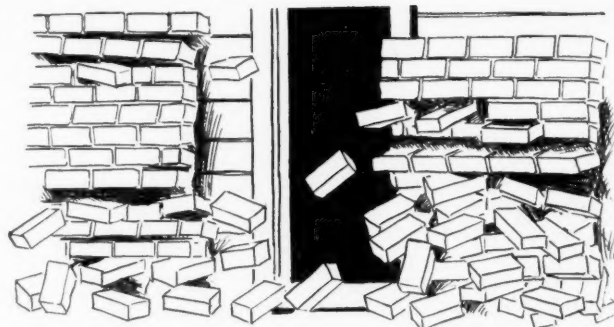
"The Wall Ties Rusted Out"

We were talking of accidents and building failures the other day. "Did you hear what happened over on that Stewart residence job?" the Architect asked. "No, tell us about it," said the Boss Carpenter. "Yes, do," the Editor urged.

"Well, you know its a big brick veneered house—well built, as I supposed—at any rate a swell looker of the up-to-date sort. Been completed just about a year when the other day during that rain storm all of a sudden—crack—swish—down slumped that brick veneering in a heap. The wall ties had rusted out—must have been cheap scrap stuff—and the first little extra strain on the wall brought the whole thing tumbling down. Luckily no one was hurt and the building itself stands there as good as ever, but they are having to re-lay the brick veneering entirely."

"I'll bet this time that contractor will look after his wall ties with considerable more care," the Boss Carpenter remarked. "A four-inch brick veneer wall hasn't very much stability of its own; it needs to be well supported—well tied to the wood framework and sheathing of the house. I have noticed that a good many builders seem to think that any old scrap metal will do for wall ties. This failure over at the Stewart residence certainly proved different. For my part, when I superintend the laying up of a wall, I want it done in a way that I can rest easy about it afterwards."

"I have a letter here right along this line," the Editor interrupted. "It is from the Allegheny Steel Band Company, and it about their Whale Bone wall ties. These are made of the best quality galvanized sheet steel, No. 22 gauge or heavier.

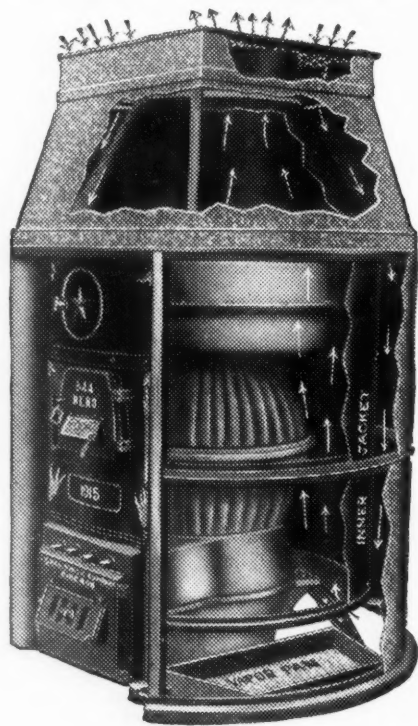


"The Brick Veneering Caved Out when the Wall Ties Let Go."

All of their efforts, so they state, have been directed at quality without regard to price; yet strangely enough, the cost of using these superior quality wall ties would run only about 50 cents more, for an ordinary house job, than for cheap ties. I wish that both the building owners and contractors could realize that they are endangering their brick construction by using thin scrap ties, and are only saving 50 cents on the entire job by doing so.

"The Whale Bone wall tie comes packed one thousand to a box, weighing fifty pounds to the thousand, no variation whatever in weight, true amount guaranteed. Each tie measures 7x7/8 inches. These ties are handled by all the principal jobbers, and can be obtained in most localities from the builders' supply dealers. The Allegheny Steel Band Company, 886 Progress St., Pittsburgh, Pa., are offering to send a sample to any builder interested. They guarantee these goods absolutely, stating that for any style of brick construction, whether solid or veneer, wide joint or buttered joint of brick, these Whale Bone wall ties are a permanent fixture when once placed."

THE HERO PIPELESS FURNACE



HEAVY CAST IRON

Good for 20 Years

Let us help you with your

Heating and Ventilating

We make a complete line of warm air furnaces and room heaters.

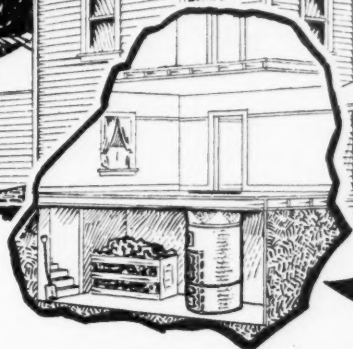
Good commissions paid to Contractors and Builders.

CHAS. SMITH COMPANY

180 N. Dearborn St.

Chicago, Ill.

**Embodies
59 Years
Furnace
Making
Experience**



You can safely install the "Mueller" Pipeless in modern homes

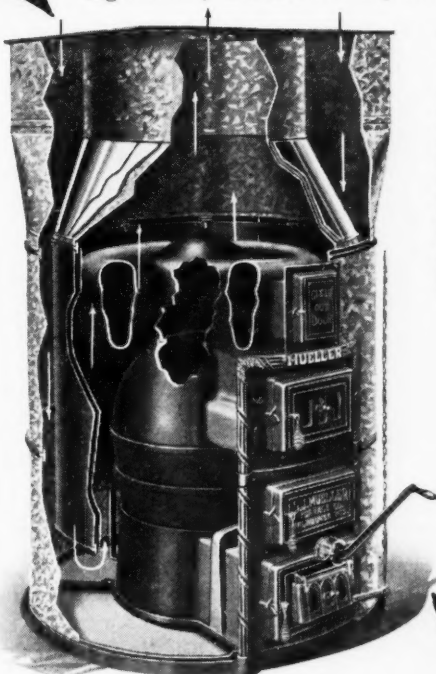
THE Pipeless Furnace is no longer a novelty or an experiment. Nor is it simply a "poor man's" heating outfit, suitable only for one or two rooms. Thanks to "Mueller"—a leader in the house heating field since 1857—the Pipeless Furnace has now come into its own as an eminently practical and efficient method of heating not only the humble cottage, but the larger modern home as well. The Mueller Pipeless Furnace, in every feature of its service, is as superior to the stove as the electric light is to the oil lamp, or the vacuum cleaner to the broom.

Get In On This Profitable Pipeless Furnace Business

There are hundreds of families in your community using stoves or inferior furnaces, who would gladly discard them for the Mueller "Pipeless" once they knew about its greater efficiency, economy and all round satisfaction. There is money, as well as satisfaction, for yourself and your customers installing the "Mueller" Pipeless in new and old houses in your locality. Write for our special proposition, and capture the cream of this coming business.

**MUELLER
PIPELESS
FURNACE**

The Mueller Pipeless Furnace is dominating the "single register" heating field by the sheer force of its superior construction and accomplishments, as have Mueller "quality" products in the Hot Air, Hot Water, Steam and Vapor Heating fields for nearly 60 years. Unlike many pipeless furnaces, the "Mueller" is not a stove or fire box, but a **real** heater, conforming to the most approved heating engineering practices, and possessing the unequalled heating efficiency and fuel economy of the nationally known Mueller Furnaces and Heating boilers.



A Mueller Pipeless Furnace for Every Requirement

There is a Mueller "Pipeless" for various sizes and arrangements of homes, various climatic conditions, etc. This insures heating efficiency and satisfaction in all its installations. Don't recommend, or install, ordinary "stock" furnaces in homes they are unsuited for, and risk failure and disappointment. Install the "Mueller"—scientific, practical, powerful "Pipeless" furnace and be sure of giving solid comfort to the larger modern home, old or new, as well as to the ordinary cottage.

Easy to Install

Absurdly easy to install the Mueller in old or new houses; simply insert register in floor above heater, and connect heater to chimney. Insures constant warm air circulation and ventilation throughout entire house, and without overheating in basement or at register.

Send at once for descriptive catalog of this remarkable furnace, and special proposition to contractors and carpenters.

INSTALL MUELLER SCIENTIFIC HEATING APPARATUS—regular hot air pipe furnaces, hot water, steam and vapor systems, leaders since 1857. Consult, free, our expert service bureau on all your heating requirements—get our estimate on all your heating installations, then install the "Mueller" and be sure, safe, satisfied.

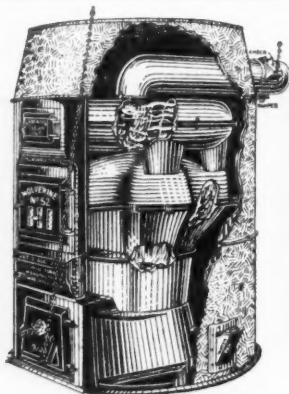
Dealer is positively protected on all his "Mueller" business. Your profits, therefore, are sure as well as satisfactory.

L. J. Mueller Furnace Co.
218 Reed Street Milwaukee, Wis.

WOLVERINE FURNACES

and the WOLVERINE SYSTEM of Heating and Ventilating are something you want to investigate. You buy direct from our factory at manufacturers' prices—furnace, registers, cold air faces, pipe and fixtures already cut and ready to put together. We send our own mechanics to install complete if you are in our local territory. If not we send complete plans and specifications that any good mechanic can follow.

We have been making furnaces and nothing else for 36 years. Our experience is at your command.

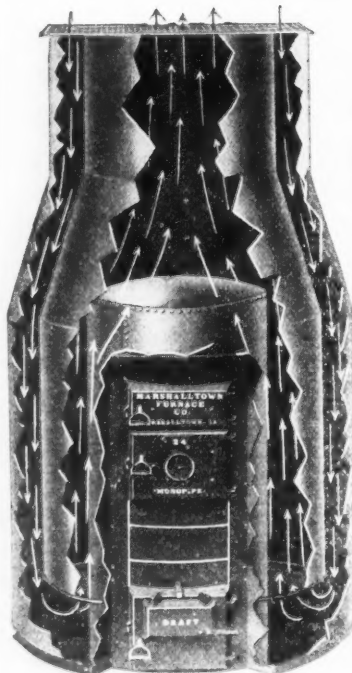


It costs you nothing to get our plans for your building and receive our written proposal.

Wolverine Furnaces are constructed on scientific principles which makes them durable and economical in fuel. Easy to clean and operate and sold under the most liberal guarantee ever given with heating apparatus. Write for large 32-page illustrated catalog that describes and shows these furnaces. It is FREE, a postal card will fetch it. Ask for catalog No. 63.

MARSHALL FURNACE COMPANY
12 Dobbins St. - - - Marshall, Mich.

THE MONOPIPE ALL STEEL FURNACE



Riveted Dust and Gas Tight

Built to deliver a large volume of warm air free of dust and gases.

Sold with that guarantee.

Marshalltown Furnace Co.
MARSHALLTOWN IOWA

Goodell-Pratt High Speed Hand Drills

These tools are particularly useful for wood finishers, floor layers or anyone else who must drill a large number of small holes very rapidly.

They are absolutely new and the makers say that there are no other similar hand drills on the market with a speed of 7 revolutions of the spindle to one turn of the crank.

The gears of these drills are protected from dirt and breakage by aluminum casings, and are packed in grease to insure easy running and proper lubrication.

The large end handles, long cranks, and big knob side handle make the drills very convenient to use. The aluminum casings make them very light.

The spindles run in ball bearings.

The chucks hold round shank drills of all sizes up to 1/4 inch in diameter.

No. 385 is shown here.

The tools are very finely finished, making them fitting companions for the 15 other Goodell-Pratt Hand Drills.

They are manufactured by Goodell-Pratt Company, Toolsmiths, Greenfield, Mass., U. S. A.



The Goodell-Pratt No. 385 High Speed Hand Drill.

Auto Trailer as an Investment

Every contractor or builder who owns a passenger car or truck can make a most economical addition to his cartage equipment by adding an inexpensive auto trailer. The capacity of a three-quarter-ton truck can be doubled by this addition, which does not add to the cost of the operation.

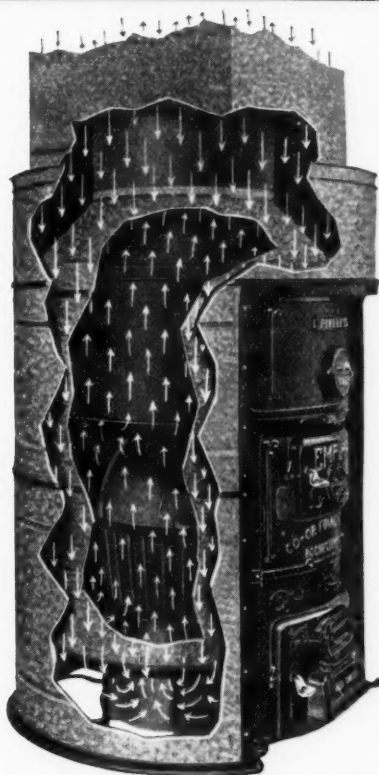
The greatest saving, however, is to the contractor who owns a pleasure car and who is continually using that pleasure car in going from one job to another. The trailer in this case effects an enormous saving, because with no additional expense the contractor may change the location of his equipment, or change from one job to another with very little loss of time. He takes his men in the pleasure car and loads his tools in the trailer, and it's a matter of perhaps fifteen minutes before the men are working on the job, while with the old method this same transfer may have required an hour or two.

This trailer permits the appearance and passenger capacity of the pleasure car to remain intact, and at the same time doubles its efficiency by the addition of a truck.

Two features necessary for the satisfactory operation of an auto trailer are the adjustable draw bar and the "All-Way" coupling. The adjustable draw bar permits the trailer body to ride level, regardless of height of the automobile frame, which is an important feature on a two-wheel job, where the load is liable to shift to front or rear over rough roads.

The "All-Way" coupling takes care of every possible motion between car and trailer. The side motion, as in turning corners, and the up and down motion occasioned by going over cross walks and the like, as well as the most severe twist. Two springs forming a part of the construction of this coupling take up all shocks in starting or stopping. The trailer may be attached to any car in less than half a minute.

(Continued to page 130.)



Sectional View, showing Double Casings and Circulation of Air

Empire Pipeless

The One Register Wonder

Adaptable to Houses with High or Low Cellars
Burns Hard or Soft Coal, Wood or Natural Gas

Shipped complete with casings, including square and round pipe to Register, smoke pipe tee with check damper complete, combination duplex register, water pan, 10-lb. can asbestos furnace cement, and chain and pulleys.

Quick, Easy and Inexpensive to Install

because it does away with all extra cutting through floors, walls and partitions. No expert needed to do the work.

Fixtures and Equipment

Ash Pit—Unusually deep and roomy.
Joints—Deep cup joints, thoroughly cemented and gas tight.
Grates—Triangular pattern. Easily removed. No bolts used.
Fire Pot—Heavy and ribbed. One-piece or two-piece, as desired.
Radiators—Cast iron or steel.
Feed Door—Opening larger than in ordinary furnaces.

Hot water connections—Through openings at left of feed door.

Gas Rings—For natural gas, furnished when ordered at a small advance in price.

Chains and Pulleys—For regulating drafts and checks.

Cement—10-lb. can Asbestos furnace cement.

No waiting. Prompt shipments from CHICAGO Guaranteed.
We carry a large stock at all times.

Co-operative Foundry Company, Rochester, N.Y.

Western Branch: 505 So. Clinton St. (Phone Harrison 6373) Chicago, Ill.

The One Register Pipeless Sanit-Air System

Heats your buildings with all common objections to furnaces removed.

No hot air pipes; no cold air ducts; no wasted heat or damaged storage in your cellar. And the fuel bill does not exceed $\frac{1}{2}$ that required for any other heater.

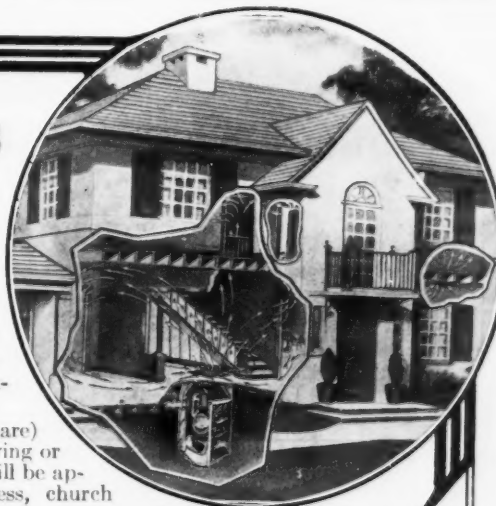
Its location in the cellar (only 4 feet square) allows the full space of every room for living or other purposes and for this reason alone, will be appreciated in every home, place of business, church or school.

The **Sanit-Air System** is the only sanitary heating system on the market that effectively combines heating power and perfect ventilation. Pure air, properly moistened is quickly circulated through one powerful direct register. (See picture.) Air cleaned and purified in circulating through the air washing system covering the bottom of the heater—insures health, comfort and cleanliness. Therefore, the name "Sanit-Air System". Uses less fuel; costs less; no expense to maintain.

Write for our card of complete instructions for installing this System. (One man can put it in place, ready for operation in one day.) We will also send you full specifications, and some honest advice on heating.

Absolutely Guaranteed by Standard Bond

The Standard School Heater Co.
CHICAGO



Special
Offer
FREE
PLANS

Also 20 extraordinary features of Sanit-Air Systems free if you return your addressed coupon at once.

Name.....

Address.....

A variety of models of the "Jackson" trailer in capacity ranging from a thousand pounds to three-quarters of a ton, will meet practically every requirement. All models are equipped with high duty ball bearings, rubber tires, and long, easy riding springs. The construction is after the latest methods in truck building. More complete details with prices upon this entire line may be had by addressing the manufacturers, The Miles Manufacturing Co., 309 E. Franklin St., Jackson, Michigan.

❖ "Simplex" Automobile and Truck Trailer

A "Simplex" trailer follows absolutely in the tracks of the rear wheels of the automobile or truck. This is accomplished by means of a patented short turn construction underneath the reach of the trailer. Both axles of the trailer are pivoted.

A trailer that does not track is dangerous for the reason that when it is turning a corner it cuts in, and any person waiting at the corner for the automobile to pass is liable to be hit by the trailer if it cuts in.

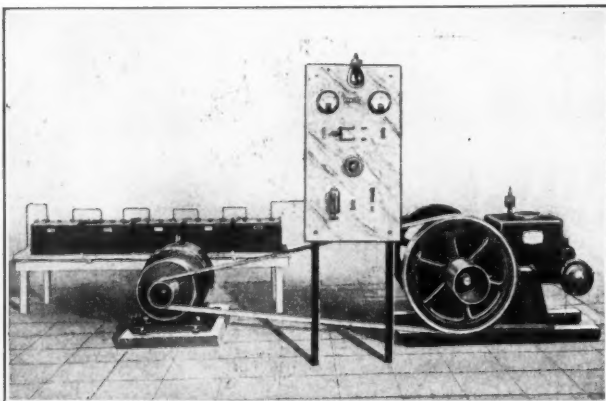
The "Simplex" automobile trailer can be attached or detached in thirty seconds.

A contractor can use his car for pleasure or inspection trips; then when he has supplies or material to deliver, can attach the trailer to his car in thirty seconds and have a three-quarter-ton truck. The Model A trailer is equipped with 30 by 3 pneumatic tires; model B is equipped with 1½-inch solid rubber tires.

The wheels of the "Simplex" trailer are exactly the same as the front wheels of Ford cars, and are interchangeable. On account of their being ball bearing, the friction is reduced to a minimum and a heavy load rides very easily.

With a load of one thousand pounds in the trailer the gas consumption is increased only 5 per cent, it is said.

For full particulars about this "Simplex" trailer write the Simplex Short Turn Trailer Co., 1200 Meridian St., Anderson, Ind.



A Main Electric Plant

will light the home safely and economically, and operate the Washing Machine, Water Pump, etc.

Complete line, from 7 light (16-C. P.) at \$76.95, and 12, 37, 50, 75; 100, 150 light sizes up.

Write for 80 page catalog and particulars.

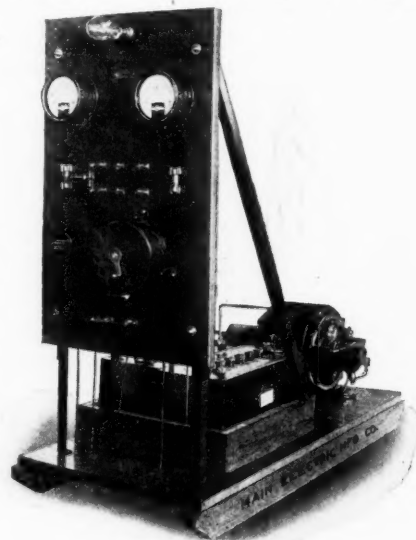
Main Electric Manufacturing Co.

Dept. A. PITTSBURGH, PA.

Small Private Electric Light Outfit

The advantages of electric light in the home, in the barn, and in the various buildings in both town and country are so apparent to everyone that it is merely a question as to the best means of securing it. The Main Electric Manufacturing Co., Dept. A., Pittsburgh, Penna., have designed complete

working plans for places where as few as seven lights will be required up to any size which may be desired. This electric plant is complete in every respect, with power, generators, batteries, lights, wire, etc., and is accompanied by suitable blue prints showing how the entire equipment should be installed.



The circular Compact House Lighting Outfit of the Main Electric Mfg. Co.

The Main Electric Manufacturing Co. has prepared shows the various styles of plants, which they are prepared to furnish, lists the equipment, and gives prices of the various sized plants. The circular will enable our readers to include the proper equipment in any of the buildings which they are erecting, or to furnish complete installations wherever desired.

THE "New-Way" Series "F" Engine Cuts Construction Costs

Because of

1. Light Weight. Engines can be moved quickly and economically from one job to another. The 6 H. P. engine complete, ready to mount on any machine, weighs 325 pounds. Other 6 H. P. engines weigh from 800 to 1500 pounds.

2. High Class Ignition System. Series "F" Engines furnished only with gear driven, high tension magnetos. No batteries—no complicated wiring—no spark coil.

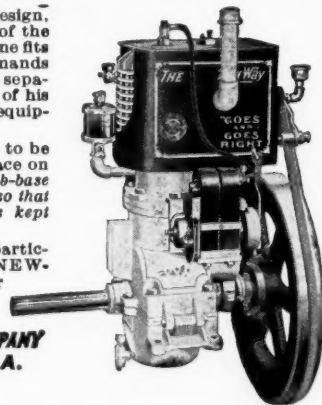
3. High Grade Carburetion. Engines are throttled governed and are fitted with float feed automobile carburetor, which insures perfect carburetion under all loads and conditions. Responds perfectly to sudden changes in load, giving closest regulation for the most exacting service.

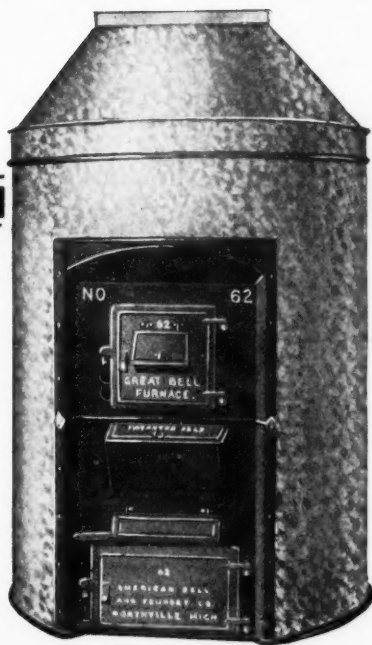
The strong and compact design, light weight and reliability of the "New-Way" Series "F" Engine fits it splendidly to meet the demands of the contractor (either as a separate power unit or as a part of his mixer, hoist, pump or other equipment).

Its compact design allows it to be mounted in the smallest space on any machine, and without sub-base its center of gravity is low, so that weight of the entire outfit is kept down.

Contractors—write for full particulars about all sizes of the "NEW-WAY" Series "F"—ask for Catalog 11.

THE "New-Way" MOTOR COMPANY
LANSING, MICHIGAN, U.S.A.
12 Pine Street





THE GREAT BELL

The Original PIPELESS FURNACE—Father of Them All

We have thousands in use. Sizes, styles and prices to suit all. \$38.00 to \$94.00

Made for the building where a furnace is needed, but where the cost has been prohibitive.

The GREAT BELL PIPELESS FURNACE will heat any one or two-story building in the most efficient manner with the least effort, and the lowest relative cost. While *Cost* is secondary to *Service* in this furnace, our methods of production and sales have reduced the cost so low that no builder can afford to overlook our proposition.

And we guarantee our furnaces to be and do all we claim for them in both catalog and correspondence.

Write for our catalogs, describing the various styles, prices and specifications of the Great Bell Furnaces. You will need them on file for future use.

American Bell & Foundry Co.
Northville, Michigan



*Get the
Manufacturer's
Price*

**Make Big
Profits Installing This**

Kalamazoo Pipeless Furnace

Big profits because you get the complete furnace at manufacturer's wholesale price. Shipped to you direct from the Kalamazoo factory. Quality of the very highest sort. Castings made from highest quality pig iron. Big fire-pot—grate operates on ball bearings. Easy to take care of—big radiation surface. Satisfied users everywhere. Let us refer you to some near you.

WRITE US Get our prices on this furnace in different sizes. We pay freight and ship without delay. Also allow full year approval test. Our guarantee protects you and your customer, and \$100,000 Bank Bond backs our guarantee. But, write us. This opportunity is too big to miss. An unbeatable quality at a low factory price. There's money in it for you—better pleased customers—better contracts and better prices for the homes you build. Write today.

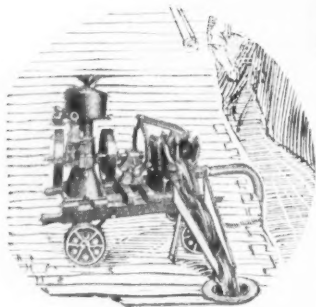
ASK FOR CATALOG No. 947

KALAMAZOO STOVE CO., Manufacturers
KALAMAZOO, MICHIGAN

WE ALSO MAKE PIPE FURNACES, WITH HEATING PLANS FREE
300,000 families using Kalamazoo Stoves, Ranges, Gas Stoves, Furnaces, White Enamel Metal Kitchen Cabinets and Tables. We have four catalogs. If interested in other lines, please say which you want.

"A Kalamazoo"
Trade Mark
Registered **Direct to You**

What you need—

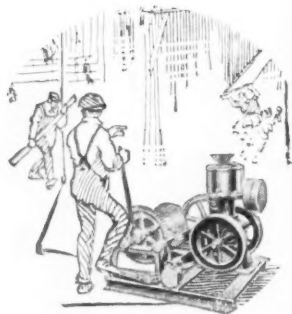


For Trench Pumping

Ideal Diaphragm Pumps are particularly adapted for exacting requirements. Heavy duty—large capacities—steady operation—low cost up-keep and operation.

Every job should have an Ideal pump on the job.

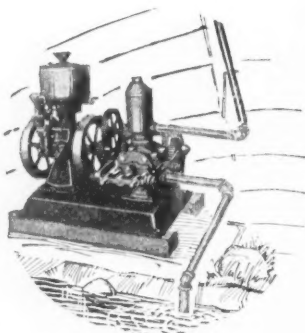
A saver of time, labor and money. Several sizes.



For Light Hoisting

You can use a light single line hoist on every job. Extremely simple and low in running cost.

One man with an Ideal One-Way Hoist can do many times the work of a half dozen. Saves time, labor and money.



For Force Pumping

When you want water in a hurry—use the Ideal force line. Heavy duty—powerful suction and force.

This pump will find work for itself on almost any job of paving, bridge or grading. Saves time, labor and money.

For General Contracting

Ideal constant service power—a boon to the contractor.

A type for every job—a power for every purpose.

From operating concrete mixers to saw rigs you can't beat Ideal Power on the job. Act by sending for booklet 516.



The Ideal Engine Co.

R. E. OLDS, Chairman

Formerly
The Original Gas Engine Co.

630 E. Kalamazoo Street Lansing, Mich.

The Laros Automobile Trailer

The Laros Automobile Trailer is being enthusiastically received by carpenters and builders; especially those doing country work that takes them far from home. They say that with this trailer hitched behind a light automobile they can get onto the job in a hurry, and take along whatever tools, machinery or building materials they require.

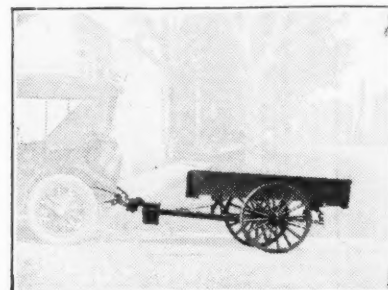
The Laros is a 2-wheel trailer, and is equipped with a remarkably ingenious fastening device which compensates for all the variations and ups and downs of the road.

A good point is made by the manufacturers of this rig, D. A. Laros & Sons Company, Grinnell, Iowa, that every builder nowadays should be independent. He

should not be obliged to call on the farmer where he is doing a job to do the hauling for him—usually it isn't convenient for the farmer to get away and time is lost, and the work delayed. The Laros people say that this trailer will make the builder absolutely independent as far as light hauling is concerned.

When we consider how little one of these trailers costs, we cannot wonder that they are being taken up so rapidly.

If you are interested to know more about this proposition of putting your car to work, write D. A. Laros & Sons Company, Grinnell, Iowa.



The Laros Trailer.

The Kalamazoo Trailer

A trailer that will successfully haul 15 heavy cans of milk as illustrated in the accompanying photograph is certainly strong enough to handle builder's gear, tools, and light jags of building materials that are wanted in a hurry.

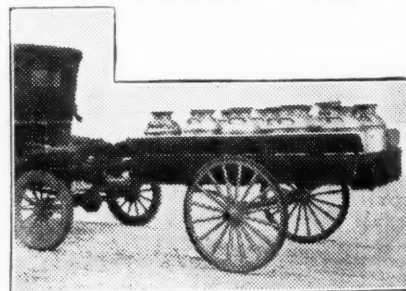
This is the "Kalamazoo" trailer of one-half ton capacity. It is built by the Kalamazoo Carriage & Harness Co., Kalamazoo, Mich. This concern also makes a complete line of buggies, wagons, sleighs, etc. Information regarding any of these items will be gladly sent to any of our readers interested.

The specifications for the "Kalamazoo" trailer call for bolted type body, 40 by 72 inches, well braced, strong and durable, provided with drop end gate and flare boards.

Timken Roller Bearings can be furnished for the axle. The springs are long elastic, specially tempered. The wheels are selected hickory, riveted, 32 inches high. The tires are 1 1/4 inch Kelley-Springfield hard rubber.

The hitch used for connecting this trailer to the car allows a full up-and-down, sideways and twisting movement without cramping. A self-locking pin makes a quick connection. A support also is provided so that the trailer will stand level when unhitched.

The Kalamazoo trailer is offered contractors and builders subject to a liberal guarantee, covering breakage resulting from faulty material or workmanship for the period of one year. Our readers should write the Kalamazoo Carriage & Harness Company, Kalamazoo, Mich., for full particulars.



The Kalamazoo Trailer.

The Man Who Was Building \$1,000 Cottages

met the man who was building skyscrapers, at the exit of the Building Material Exhibit. "Hello, Tom," said the skyscraper man, his broad smile deepening to a chuckle. "Have YOU discovered this place, too?"

"Have I?" Tom waved a sheaf of papers triumphantly. "Why I've just found where I can save 12% on plumbing, 10% on interior trim and 25% on roofing material! After this, when I want a figure on anything, I'll come here FIRST. And the best thing about it is, you learn all the newest and best building methods here—the short cuts, economies and new materials that cut construction costs. It's a regular Clearing House of Building Information."

BUILDING MATERIAL EXHIBIT

Get into the habit of visiting the Building Material Exhibit whenever you are in Chicago. You will find it a big aid in estimating, in securing the lowest figures and the best materials.

200 intensely interesting exhibits by America's leading manufacturers of building material and equipment. If distance prevents coming, write and secure estimates on any material without charge or obligation.

BUILDING MATERIAL EXHIBIT

Entire Second Floor, Insurance Exchange Building

CHICAGO

LOOK
BEFORE YOU
BUILD

Suggestions on Applying Varnish

The following material is taken from one of the booklets of the F. W. Devoe & C. T. Reynolds Company, New York, and is an indication of the value of the information that can be found in their booklets. Copies can be secured on request.

"The three most important points to be remembered in applying varnish are:

"1st. Keep the temperature as near 70 degrees Fahrenheit as possible.

"2d. Keep all dampness away during varnishing and during drying.

"3d. Be certain that each coat is thoroly dry before applying the next.

"The drying of varnish is retarded by both cold weather and hot weather. For this reason varnish should be applied at

mistake to shut a room up tight after it has been varnished.

"If varnishing is done in cold weather the building should be properly heated during the work.

"It is also important that the varnish itself should be as near 70 degrees Fahrenheit as possible. A chilled varnish should never be used. A can of varnish is liable to become chilled in a cold shop, or in a cold room, or even in carrying it from the shop to the job in cold weather. In this case it should be warmed up near a stove before commencing to use it. If the varnish is warmed up too much it may become a little frothy. This does no harm, as the bubbles are easily worked out with the brush."



A New and Better Method for Finishing Building Trim and Cabinet Work

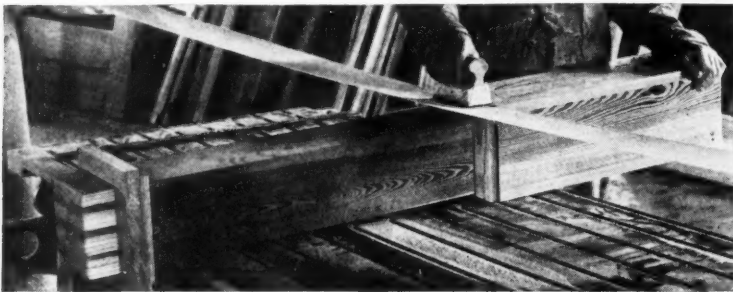
A great improvement over hand methods in finishing all kinds of exterior and interior trim has been devised. This announcement will greatly interest contractors and builders all over the country.

A wide demand for better wood finish has grown up in recent years. Owners are demanding that the native beauty of the wood trim in buildings be fully brought out. This cannot be done unless the trim receives a most careful finishing before the stain, or varnish, is applied. In addition, owners are requiring this high quality finish in places that formerly received secondary attention, as stair treads, second story trim, etc. The contractor has

been compelled to comply with the demand. The only way he could do it heretofore was by putting on the necessary finish by hand sanding—a disagreeable and expensive job.

There are few workmen who like to sand trim by hand.

(Continued to page 136.)



Finishing Ornamental Parts; Shows the Versatility of Yates Belt Sander.


a temperature as near 70 degrees Fahrenheit as possible.

"Damp, muggy weather also retards the drying of varnish. Plenty of cool, dry air is necessary to make a varnish dry properly. Therefore, after doing inside work, open the windows an inch or two, top and bottom, so as to give the room plenty of good ventilation and light. It is a



THAT WOOD CORE

is responsible for the
many desirable qualities of



Trade Mark Reg. No. 94745

Consider first, of course, its chief use as a wall lining, and why, because of its wood core, it is **better** in every way than lath and plaster, stronger, more durable and sanitary.

Besides it has a 101 other uses, such as:

- lining summer garages and outdoor sheds for warmth.
- lining summer cottages (helps keep them cool).
- quick repair partitions.
- enclosing rooms in attic or cellar.
- building dust proof closets or cabinets.
- panels in wainscoting or beamed ceilings.
- shelves, drawer bottoms, cabinet backs, etc.

Sold by dealers everywhere.

Write for free sample and interesting booklet.

The Compo-Board Company

5777 Lyndale Ave. No. Minneapolis, Minn.



Roberds IDEAL Wall Board

**Ideal in Cost, Service,
and Appearance**

Installed at just about one-half the cost of plaster and lath; and in comparison with other wall boards is from ten to twenty per cent lower in prices, and fifty per cent more satisfactory.

Embodies all the "proof" qualities. It's grained appearance presents the most pleasing effect. Or it can be papered, painted, tinted or paneled to good advantage.

Our catalog is full of helpful suggestions on the use of wall board

THE ROBERDS MFG. CO.

100 Spencer Ave. - - Marion Indiana



BAYONNE

Outclasses Copper Roofings

Particularly at this time of soaring metal prices it will be to your and your clients' advantage to recall the superiority maintained over Copper Roofings, tar and other prepared roof coverings by

BAYONNE

Economy The laying requires less time and less labor, because it is so much simpler. It is tacked only on the edges—without wet setting—and requires but one coat of paint for ordinary purposes. BAYONNE'S economy is fully explained by its remarkable

Durability Unlike copper and other metal roofings, BAYONNE is not affected by heat or cold—it therefore never warps, bulges or cracks as copper roofs do. Nor does it blister, crumble and corrode like other prepared cloths and tar coverings. **Once laid, it stays flat.**

Cleanliness BAYONNE is impervious to water. **It never leaks.** Therefore it is the easiest to keep clean by simply putting the hose on it.

Write for Sample Book "N" giving prices and laying instructions. See Sweet's, page 426

JOHN BOYLE & COMPANY, Inc.

112-114 Duane St.

NEW YORK CITY

70-72 Reade St.

Branch House: 202-204 Market St., St. Louis



WHEN this check went to the bank it looked "just as good" as the others which were promptly cashed, but it came back stamped "no funds."

Other wallboards may look as good as Beaver Board, but they lack the backing of the fund of research, the fund of manufacturing knowledge, the fund of complete equipment and the fund of genuine service which The Beaver Board Companies' longer experience has established.

Beaver Board on the wall is like money in the bank. You don't have to take chances—you know it's good.



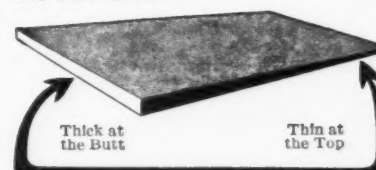
The BEAVER BOARD COMPANIES
564 Beaver Road - - Buffalo, N. Y.
Branches in Principal Cities

BEAVER BOARD

Don't Lay
Another
Roof
Until We
Send You a

Winthrop Tapered Asphalt Shingle

Just ask for a sample shingle. See how tough, how pliable and how durable it is. See how it is made like a wooden shingle—thick at the butt and thin at the top. See how easy to lay it is. See what a beautiful roof it will make—red, green or slate-black. Then you will understand why owners want the Winthrop when they know about it.



Winthrop Tapered Asphalt Shingles will enable you to get most of the roofs in your town. They win out with less argument than anything you ever tried to sell, for they look better than wood shingles and they have all the protection of asphalt.

The Beckman-Dawson Company
ASPHALT SHINGLES

Factory: Argo, Ill.

1413 Y. M. C. A. Bldg., Chicago, Ill.

The Only Tapered Asphalt Shingle



Actual photograph of Keezon Lath as it looks before any plaster is applied.

Actual photograph of Keezon Lath, showing first coat of plaster. Second coat can be applied without waiting for first coat to dry.

Back view of Keezon Lath after it has been plastered. Note the perfect key.

Side view of Keezon Lath after plastering. A plaster saving of about 25% is made possible by the use of Keezon.

The Greatest Improvement Ever Made in Lath Construction, Places

KEEZON LATH

in the unique position of combining every advantage of every other lath (wood, composition or metal) and yet, in addition, of being very reasonable in price.

Keezon Lath is fire-resisting and may be specified in slow-burning construction. Keezon Lath can't rust. Its use assures a saving in material and labor in the finished wall of at least 30%. It is unequalled for stucco work. It can be applied to flat surfaces without furring and it can't warp, buckle, expand or contract.

Keezon cellular construction forms a key to which plaster clings with greater tenacity than it will to any other known form of construction.

In a test made to demonstrate the holding strength of the Keezon key, water to the depth of two inches was poured on top of a Keezon ceiling and allowed to remain for twenty-four hours. At the end of that time most of the water had soaked through the plaster without causing the slightest loosening or sagging.

Get Full Particulars

Every Architect, Contractor and Builder should know about this really wonderful lath. Every time it is used the remark is always made—"This lath is going to revolutionize the lath industry." And it's a fact, it is.

Particularly if you are going to do some stucco work get Keezon particulars. For, for this class of work, Keezon is not even approached.

You owe it to yourself to investigate.

Cellular Lath Company

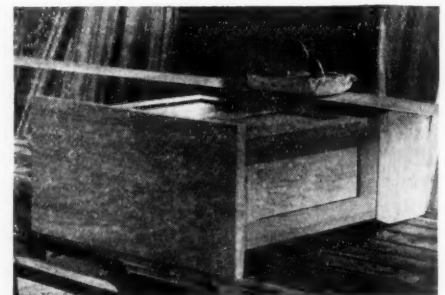
417 La Salle Bldg. St. Louis, Mo.
Factory: 5126 N. 2nd St.

Cellular Lath Company, 417 Wainwright Bldg., St. Louis, Mo.
Please send full particulars.

My dealer is.....
Name.....Address.....
City.....State.....

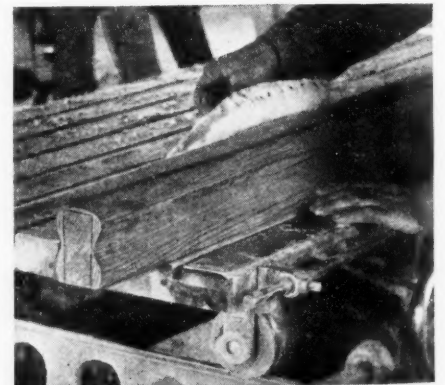
As a result, the job is handed down from man to man until it commonly falls to the lot of the beginners or poorer workmen because the poor chaps have no one on whom they can thrust it. Again, hand sanding is a slow process, and with wages where they are, the contractor can't afford to put a skilled workman on the job. Sand finishing is an art of itself. Only skilled men can do it right, and many are the kicks that the much-badgered contractor has received because greenhorns did the work. He has been caught between the devil and the deep blue sea with no prospect of escape from either until now.

The P. B. Yates Machine Company, of Beloit, Wis., has recently developed and put on the market a sanding machine that will prove a boon to contractors and builders everywhere. It is simple in operation, yet so versatile in its applications that it promises to put hand sanding in the museum of antique building methods. Anything with a flat surface can be sanded with ten or fifteen times the speed that it can be sanded by hand. The sand belt used is so flexible that handblocks, cut to fit the work, will permit its application to almost any round, curved, concave, or angular surface, even the larger patterns of moulding.



Sanding a Colonnade Base. Typical Application of Machine to Paneled Work.

A skilled machine hand is not required to operate it. Any workman can do good work at once. A small amount of practice enables him to sand the most complex pieces with ease. The machine is so sensitive and so responsive to the operator's slightest touch that the finest finish possible can



The Yates Flexible Belt Sander as Applied to the Finishing of Stair Rails.

be obtained, equal in every way to hand finish, without rounding off corners or fuzzing the grain.

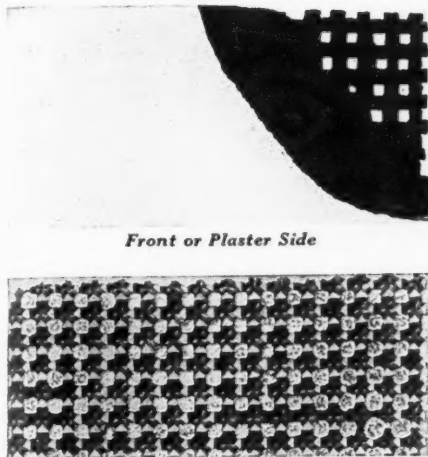
The illustrations accompanying this article merely suggest the scope of the machine. It is efficient on any work that must be sanded. Stair treads, rails, window sash, door panels, built-in cupboards, buffets, wainscoting, newel posts, screen frames, casing, columns, porch, posts—in fact, practically all forms of trim are efficiently sanded by the Yates Flexible Belt Sander so completely that touching up by hand is needed only in corners of other small irregular places.

A great advantage obtained by use of this machine is that trim can be sanded in the shop, thus employing odd moments most easily and efficiently. The finished work can then be taken to the building, and when fitted in place, is ready for the painter.

Here is a machine that is offered to contractors in a time of need. It eliminates expensive hand methods, and guarantees uniformly excellent finish. It is fast in opera-

(Continued to page 138.)

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER



Front or Plaster Side

Reverse or "Drop" Side

Composite Metal Lath

contains all the features desired in a lath, with a positive saving over any lath in original cost, in labor, in time and in material.

Made of iron, brick and wire, baked together by special process, which makes adhesion positive, and provides an absolute key for the material which is applied.

It is fireproof, porous, self-furring and the only metal lath with "suction."

But let us send you a sample, together with a description of the immense saving effected by this lath. Will be glad to do it upon receipt of your card.

Composite Metal Lath Co.

128 Broadway, New York

Herringbone RIGID METAL LATH

*Its Many Uses
and
Advantages*

A new catalog containing complete specifications, full details and many illustrations. Mailed free on request mentioning firm's name.

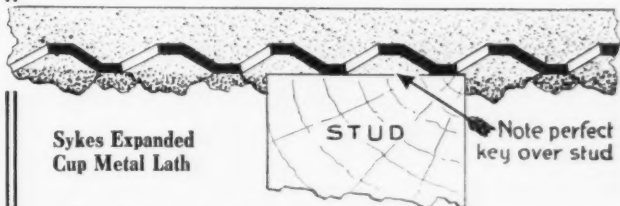
The General Fireproofing Co.
6006 Logan Avenue Youngstown, Ohio



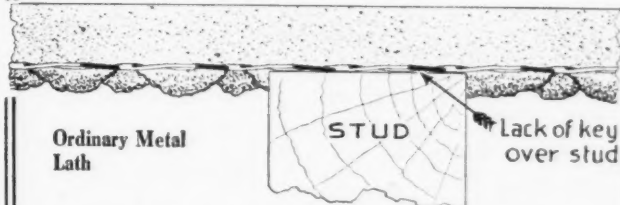
For Interior Work as well as for Stucco Work Sykes Expanded Cup Metal Lath is best, not only because it saves the cost of furring strips, but also because of its **weight**, its perfect **key**—the rigidity and durability of the wall it assures.

SYKES Expanded Cup METAL LATH—Self Furring

This Metal Lath is heavier than others, therefore more rigid, more durable. Its peculiar formation allows it to reinforce the wall more surely—for this lath is imbedded in the mortar one-fourth inch. Note this cut:



Now look at this cut:



The point of weakness is over the stud where the mortar gets no "grip." Less mortar is required when you use Sykes, because—all grounds being measured from face of stud, not from face of lath—the key mortar in Sykes Lath is largely in the wall.

For an Honest, Durable Job Use the Lath that Makes a Real Backbone of Lathing Strength—Sykes Expanded Cup Metal Lath

Approved by U. S. Government for Post Office Work. Indorsed by Architects and Contractors.

Free Booklet—Metal Lath Specifications—and free sample of Sykes Metal Lath on request





Finishing Stiles and Rails of a Door with the Yates Flexible Belt Sander.

tion—large in output. It requires no specialized operator, and employs moments otherwise wasted. It opens untouched fields for building activity to the contractor because it enables him to build better buildings at a lowered cost, thus reaching thousands who could not heretofore build to their liking. Best of all, it is marketed at a price that

puts it within reach of even the smaller contractors and builders.

The announcement concerning this machine, appearing on another page of this issue, is worth your careful attention.

SLATE WE HAVE WHAT YOU WANT

*In Roofing Slate, Slate Blackboards
Structural and Plumbers' Slate*

SATISFACTION GUARANTEED in QUALITY and PRICE

Ask for Delivered Prices

J. K. HOWER Station C Danielsville, Pa.

R. J. KICHLIN, Sales Agent



Montross Metal Roofing Co., 110 Erie St., Camden, N. J.

Best Roof Under the Sun

Montross Metal Shingles for House or Barn or buildings that require durable, economical roofs. Easily applied. Fire, lightning and storm proof. Nine different designs. Write for illustrated catalog and testimonials from satisfied customers who have used Montross Roofing for a "Quarter Century." Liberal commission to good, live agents.

ROOFING SLATE SINCE 1869

Miners, Makers and Shippers of all Styles and Colors of Roofing Slate. Write for Prices.

RISING & NELSON SLATE CO.

Main Office: West Pawlet, Vt.

Branch Offices:

1058 Marbridge Bldg., New York City. 4 Post Office Sq., Boston, Mass.
Office and Yard, 2554 W. Harrison St., Chicago, Ill.

ROOF SLATES

STRUCTURAL SLATE BLACKBOARDS

E. J. JOHNSON

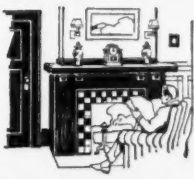
38 Park Row New York

Quarry Operator

BLACK, GREEN, PURPLE, RED


Booklet, Samples and Prices on Application

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER



**1866
CURTIS
WOODWORK**

THE CURTIS COMPANIES
Clinton, Iowa



WRITE for convincing reasons why you can save labor, time and needless expense by using Curtis 1866 Woodwork and Built-in Permanent Furniture.

Any reputable lumber dealer can supply Curtis products. Go with the owner and look over Curtis designs. Both of you will be better satisfied. Let us prove it. Write today to Service Bureau.

Genuine Franklin Tunnel Roofing Slate

For Real Roof Protection

How can artificial roofing protect your building from the elements of the weather, if the roofing itself must be protected and stored away in a dry place to preserve it before being placed on the roof?

G. F. T. Slate

are carried in stock on our slate banks without covering of any kind, always exposed to the weather. The only ROOFING that need not be stored in a dry place to prevent it from rusting, decaying, or disintegrating. Samples and catalogue sent on request.

SLATINGTON SLATE CO.

SLATINGTON, PA.

THE ROCK OF AGES CLEFT FOR YOU

RED SHELDON'S SLATE

THE ROOF FOR AGES ALWAYS NEW

ECONOMICAL — ARTISTIC — FIREPROOF
Outlast the building. First cost, only cost. The only roof you can afford to consider for a permanent investment. Artificial substitutes bring endless expense for upkeep. Post a postal and get posted.

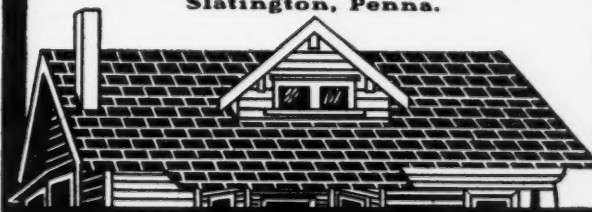
F. C. SHELDON SLATE CO., Granville, N. Y.

UNFADING ROOFING SLATE

and Slate Blackboards

*Best to be had and made in
Slatington — Buy from us*

Slatington-Bangor Slate Syndicate, Inc.
Slatington, Penna.



Durable, Practical, Economical



For Porch Roofs

There is no better Covering than

**CON-SER-TEX
CANVAS
ROOFING**

It Solves All Roofing Problems.

Investigate the merits of this roofing material. Its claims for your consideration are based on the following facts:

Costs very little. Is easy and inexpensive to lay. Makes a neat, smooth, durable surface. Will not leak, rot, stretch or shrink.

CON-SER-TEX is a specially woven canvas roofing which is chemically treated to preserve the fibre from mildew and the detrimental action of the oil in paint. It is water-proof, rot-proof and wear-proof. When properly laid, it will last as long as the house itself.

It is furnished in such widths and weights as are best suited for various classes of work, thus practically all waste is eliminated.

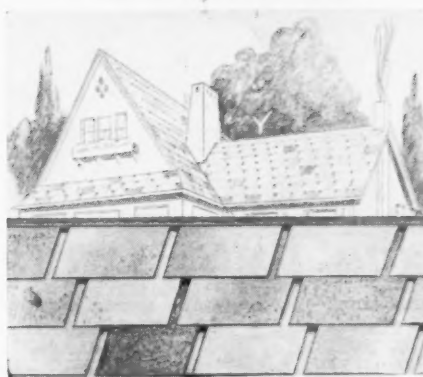
A postal will bring our new book "Roofing Facts and Figures". Send for it NOW. It's interesting and will help you save money.

William L. Barrell & Co., 8 Thomas St., New York City
Chicago Distributor:—Geo. B. Carpenter & Co., 430-40 Wells St.
California Waterhouse & Price Co., Los Angeles
Distributors:—The Pacific Building Material Co., San Francisco

Mottled Roofs are in Fashion Now

That variety of surface texture so much sought for is now obtainable in the

**Mottled Hudson
Asphalt Shingles**



Full sized working samples of this very artistic desirable and easily applied shingle sent free.



Asphalt Ready Roofing Co.

Dept. 53

9 Church St., New York, N. Y.

Asphalt Ready Roofing Co., 9 Church St., New York, N. Y.

Send full sized working sample of Mottled Hudson Shingles with no expense or obligation to me.

Name.....

Address.....

The Page Trailer

There is no need to buy a truck or wagon to do your hauling if you have an automobile. The cheapest truck to carry from 600 to 1,200 pounds costs anywhere from \$600 to a \$1,000, and with it you have only a truck. An auto trailer on the other hand, serves the purpose, carries as much as a truck, does the work at less expense for tires and fuel, and at the same time you have both a truck and a pleasure



View of Special Shock Absorbing Hitch Used on Page Trailers.

vehicle.

Many contractors and builders are realizing this and they are looking into the Page trailer as one of the most practical rigs on the market. Some contractors are even finding it profitable to invest in two or more trailers so that one can be loaded or unloaded while the other is running, thereby keeping the auto constantly employed.

One of the distinctive fea-

tures of the Page trailer is its attachment or hitch. This is illustrated in the accompanying photograph. This hitch combines a universal joint and shock absorber which takes up the shock of either starting or stopping the load. It is a simple, practical device that simply can't get out of order, and is strong enough to stand the racket.

A steel yoke bolts to the frame of the car, not to the rear axle. The Page people say never attach a trailer to the automobile axle, as no axle is made to stand this strain. They recommend attaching to the back frame, and so provide this wrought iron yoke. When in place, this is practically all under the body of the car projecting only about two inches. The trailer is attached or detached easily by simply dropping in or lifting out the coupling pin.

A useful feature of this coupler is a standard for holding the trailer level when not attached to auto.

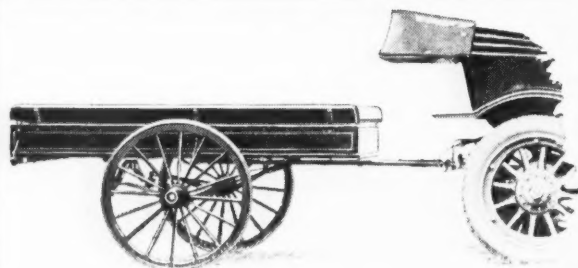
Our readers will be interested to investigate this trailer proposition. Write the Page Bros. Buggy Company, Marshall, Mich., for full particulars. They are an old established concern, founded in 1869. Yet they do not hesitate to keep up with the times, as is evident by the way they are developing this newest idea in the transportation field, the auto trailer.



Plumbing and Heating Supplies

A great many of our readers will no doubt be glad to have a copy of the new Catalog "H" of B. Karol, 800 So. Kedzie Ave., Chicago. It illustrates a complete line of plumbing and heating supplies, including both piping and fixtures. All

(Continued to page 142.)



You do not need an expensive truck when you have an automobile.

Let us tell you how much you can save by using the

Page Auto Trailer

We use three-quarter platform springs and trailer is coupled to auto by a Universal Joint and Shock Absorber Combination that is positive and does not disfigure your car. No tugging or jolting of car with this attachment. Trailers built in three sizes, with or without Ball Bearings.

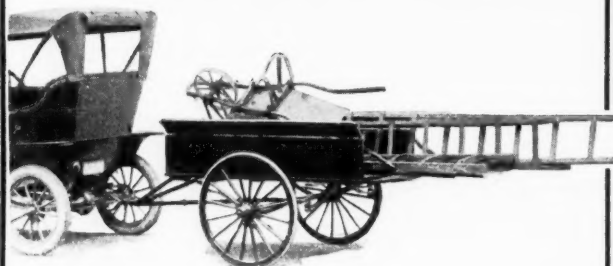
Send a postal now asking for full particulars and prices.

PAGE BROS. BUGGY CO.

(Established in 1869)

MARSHALL, MICHIGAN

BLUE RIBBON TRAILERS



THIS shows the adaptability of **Trailers** to the use of the contractor for doing hasty errands and making quick moves.

It saves time; time is money; so it saves money. Full description and price on application.

Durant-Dort Carriage Co.
Flint, Mich.

Get A Real Trailercar While You Are At It



THE Rochester Trailercar is built like an automobile.

It is not like many of the so-called trailers—simply a box on four wheels with a draw bar.

It is designed and built by experienced motor car engineers of world-wide experience who have studied the delivery and light haulage problems from every angle. The Rochester Trailercar is built exceptionally low, making it easy to load and unload.

It will carry a load at a speed of from 25 to 35 miles, safely and without skidding or jostling.

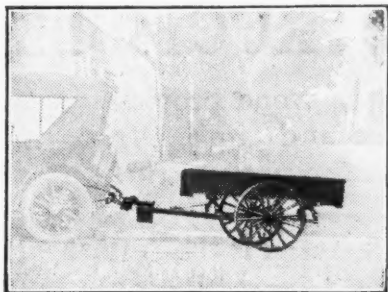
The Rochester Trailercar is the only light trailer that will back, and that tracks perfectly.

The American carpenter and builder can use the trailercar to good advantage—it will save time—save money—save bother.

It can be attached to any make of motor car.

Illustrated folder, showing details of construction and a variety of uses mailed upon request

The Rochester Trailer Company, 122 Main St., East Rochester, N.Y.



Make your automobile more of an asset by the addition of a

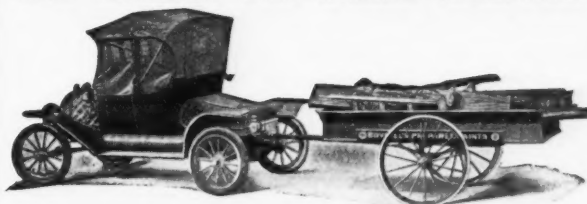
LAROS Automobile Trailer

If you own one of these trailers you will not have to depend on the drayman or the farmer when you

are in need of some material in a hurry. It is just the thing for hauling tools, saw rigs, cement mixers or other light loads.

D. A. Laros & Sons Co., Grinnell, Iowa

THE TRAILER WAY MAKES CARS PAY



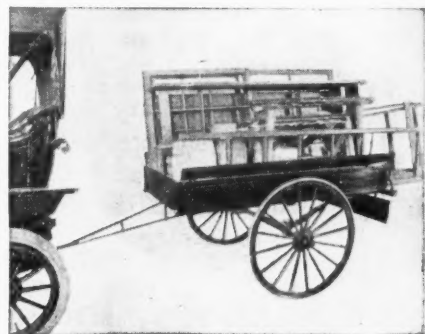
A MODEL FOR EVERY NEED

Adjustable Draw Bar and a Coupling which takes care of every movement even to the most severe twist.

Catalog ready—ask for it.

THE MILES MANUFACTURING CO.
309 Franklin St. Jackson, Mich.

MANUFACTURERS OF Automobile Trailers and Horse Drawn Vehicles



Our Auto-Trailer has been in use for over two years and they have given good satisfaction. We also build Trailers to your order.

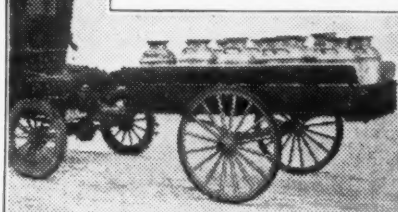
Mr. Contractor:
If you do not find the Deance Auto-Trailer with your dealer, write us for full particulars, prices and terms.

**THE DEFIANCE
CARRIAGE COMPANY**
Reed Brothers, Props.
DEFIANCE, OHIO

N.B.—
Any Style Hitch you might need for your car.

Kalamazoo Trailer

Built by Men Who Know



The hitch for connecting the trailer with the car allows a free up-and-down, sideways and twisting movement without cramping.

**One-Half Ton
Capacity**

Solve your cartage problem in the most inexpensive way by writing for full information on the Kalamazoo Trailer.

Kalamazoo Carriage and Harness Co., Kalamazoo, Mich.

necessary tools for plumbing and steam heating work are also featured.

It is a 200-page catalog of handy pocket size, printed on good paper, and nicely illustrated. Copies may be had on request.



Farmer's Friend Cup Elevators

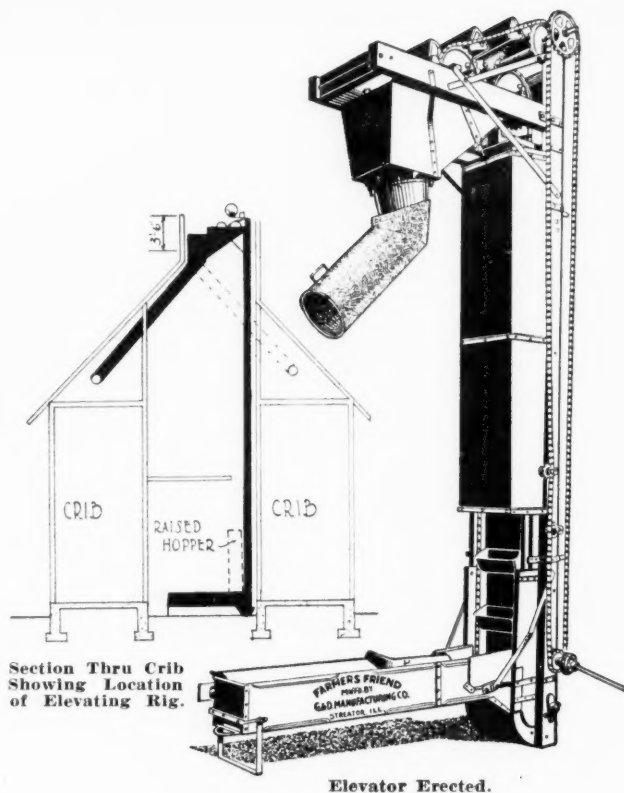
In emptying the grain from the buckets into the spout hopper, it is very important that the buckets be turned so that all the grain that is being carried will be poured into the spout hopper. If the result is not secured there will be choking at the boot and the best conditions will not be attained.

The accompanying illustration shows the "Farmer's Friend" elevator in which the design is carefully handled to prevent any of the grain from being carried over and clogging the boot. The spout hopper is large so as to catch all the grain, and the buckets are turned completely upside down while traveling over it. This insures the best possible results.

The cups traveling up the front side of the elevator pick up the grain from the feeder as fast as it is carried to them. The buckets do not scoop the grain up, but it is thrown directly into them, which cuts down the amount of shelling to the minimum and also prevents the bending of the cups or jerking.

All the parts that enter into the construction of this elevator are specially tested to see that they are strong enough for the work intended. An H4 pinned chain is used, and in tests this has been shown to be able to handle three times the maximum load of the elevator.

The elevator fits against the inside wall and only takes up 20 inches of space in the driveway. The feeder folds against the elevator when not in use. The elevator can be placed inside the crib wall if desired. The sheet iron covering prevents any grain from being spilled in the driveway.



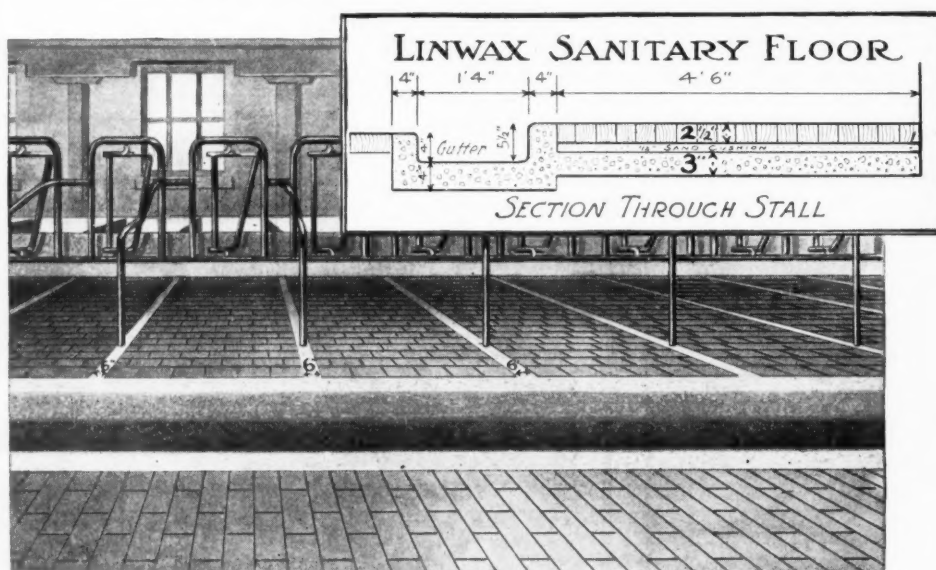
Section Thru Crib Showing Location of Elevating Rig.

Elevator Erected.

Circulars and catalogs describing the "Farmer's Friend" elevator can be secured from the makers, the G. & D. Mfg. Co., Streator, Ill. They have a special agency arrangement that they are offering to our readers.

LINWAX—THE FLOOR INDESTRUCTIBLE

Linwax Floors are restful The vertical fibres of the wood provide a resilient and comfortable resting place for hoof and limb. In this respect Linwax Floors are the nearest approach to natural turf

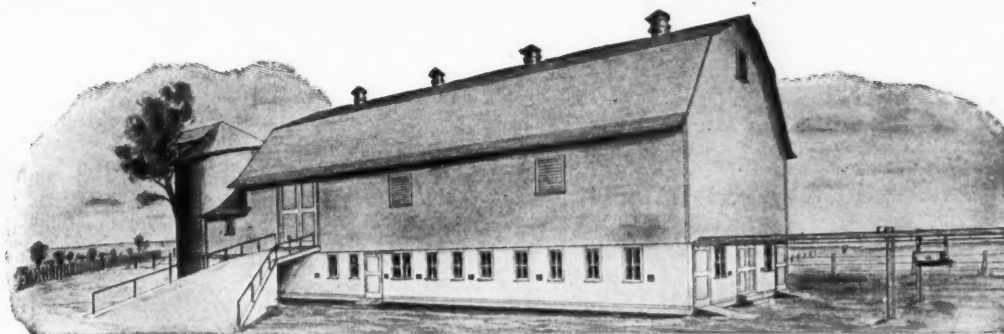


It is the Permanent Floor for

Dairy Barns
Horse Stables
Bull Pens
Hog Houses
Garages
Carriage Houses
Wash Rooms
Work Shop Floors

Linwax Sanitary Floors are the cheapest of all floors in the long run. Full information free for the asking.

LINWAX MANUFACTURING CO., Indianapolis, Ind.



CONTRACTORS—

Are you going to secure your share of the barn contracts to be awarded in the near future? You will agree with us that this work is of a profitable nature, and especially so in view of the assistance we offer.

Our Free Service Bureau is maintained for the benefit of all those interested in better barn construction and equipment. Floor plans are submitted without expense or obligation, and any additional information is promptly furnished upon application.

PORTER STEEL STALLS, COW STANCHIONS, LITTER CARRIERS, BARN DOOR HANGERS, HAY CARRIERS, FORKS, HAY SLINGS AND OTHER TOOLS ARE ACKNOWLEDGED LEADERS EVERYWHERE

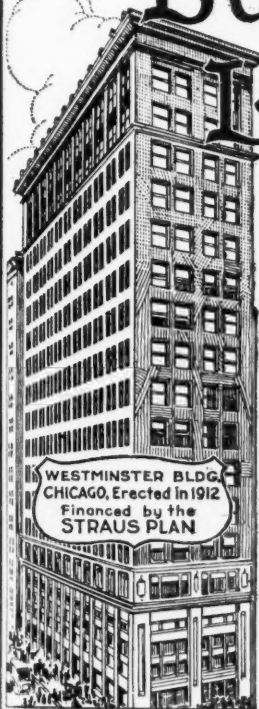
Investigate and determine the prospective barn builders in the community; then call on us for any assistance relative to interior arrangement, construction, ventilation, etc., and see to what extent Porter Service serves.

New Barn Plan Booklet and Complete Catalog furnished upon receipt of your letter containing the names of parties who expect to build or remodel barns.

Write today and learn more about modern barns and equipment.

J. E. PORTER COMPANY, 620 Fremont Street, Ottawa, Illinois

Building Loans



During the wonderful progress in American city building in the last quarter century, the most successful methods for financing business buildings have come to be recognized.

The builder who must use borrowed capital will do well to consult those who thoroughly understand these methods.

As one closely in touch with construction work you should write for our Booklet "L," explaining the Straus Plan of financing real estate improvements.

S. W. STRAUS & CO.

Established 1882 Incorporated
Straus Building, CHICAGO



"Uncle Si" Says

"When a tool is the result of 84 straight years' experience, you can depend on it that it's a good tool."

Our experience in making saws dates back to 1832—84 years spent in perfecting saws that are guaranteed in temper, quality of steel and workmanship throughout, to be as perfect goods as human skill, best material and a knowledge of manipulating steel can produce.

SIMONDS Hand Saws

Have that easy "hang" that pleases the carpenter who wants to do careful work.

At your dealers or a highest grade 24 or 26-inch saw sent prepaid for \$2.50

Simonds Mfg. Co.

Fitchburg, Mass.

Write for our free book, "Simonds Guide for Carpenters."



KOHLER

Trade-Marked Enameled Plumbing Ware combines hygienic beauty with utility

The designs are modern. The enamel is purest white, and all KOHLER products are of one quality—the highest.

Builders throughout the country select KOHLER Enameled Plumbing Ware because they accept the permanent trade-mark as their safe guide.

The "Viceroy" one-piece built-in bath

This is the most popular tub of its type and design that has ever been produced. Its exceptional lightness makes installation easy. The price is low, due to manufacturing economies.

This beautiful bath tub, which has been installed in some of the finest hotels of the country, as well as in thousands of homes ranging from the modest bungalow to the most elaborate mansion, is fully described in our book, "KOHLER of KOHLER."

Write us today for a free copy.

"It's in the Kohler Enamel"

KOHLER CO.

Founded 1873

Kohler, Wis., U.S.A.

BRANCHES:

Boston Pittsburgh San Francisco Detroit
Atlanta St. Paul Philadelphia St. Louis
Seattle Los Angeles New York
Chicago London

Columbia Lavatory
"Viceroy" Bath—Plate V-12-A

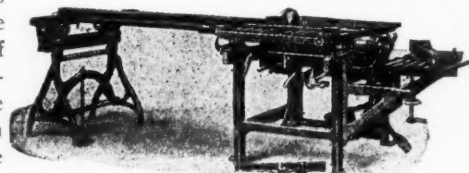


Beach Sawing Machinery

All contractors and builders are interested in the question of cost reduction and profit increase. The most important step toward the attaining of this end is the utilization of power and machinery and efficient equipment of all kinds.

Your problems can be solved only by machines that are designed and built by experts to fit the conditions that have to be met by the contractor. The Beach Manufacturing Company, Montrose, Pa., offer unusual facilities to the builder in employing machinery that is suited to his needs.

They are issuing a little circular that shows some of the many machines in their line that are of value to contractors under various conditions. The completeness of this line of machines and the many ways in which they are equipped make possible for the



One of the Beach Woodworkers.

contractor to secure the type of machine that is particularly suited to the work that he is generally engaged in.

The illustration shows a double arbor rip and cut-off saw with extension. It is one of the styles that has been very popular with builders.

The catalog of this concern shows many of these machines also and the Beach Manufacturing Company will be very glad to make suggestions as to the type best suited to conditions.



"Art-Kraft" Building Corners

Improvement is the order of the day. One of the neatest devices for the improvement of residence construction and for the convenience of the carpenter trade, brought out in recent years, is the "Art-Kraft" line of metal building corners manufactured by the Canton Metal Ceiling Company at Canton, Ohio.

These are for use with lapped or drop siding and the manufacturer claims their employment not only results in more attractive and permanent corners, but a great saving in cost is accomplished. Their use dispenses entirely with the tedious and expensive job of mitering the siding by hand, and there is no possibility of the corners opening up owing to the action of the elements.



"Art-Kraft" Corner.

These "Art-Kraft" corners are made of galvanized iron in three sizes, both plain and embossed patterns, for inside as well as outside corners. They are exceedingly popular in localities where lap siding is used. Manufacturer will be glad to mail literature and prices, as well as samples to interested parties.



Half a Million Dollars Being Spent to Make Business Square Architecturally Attractive

Lake Forest's new business section, now nearly completed, is the most unique of its kind in America, the general scheme being an adaptation from old English and German towns.

Behind the curtain of old business fronts, buildings have grown and are growing. When in a few months the curtain

(Continued to page 146.)

Here's a Remarkably Fine SCREW DRIVER

No. 111
Automatic
Screw
Driver
\$1.50

The handle is well shaped to make firm grasping an easy matter. It will drive a screw straight with an easy push. By the simple movement of a knob you can reverse the twist or change it to a stationary screw driver. It has 3 interchangeable blades, is made of excellent material, well finished—it's a mighty fine tool all the way through.

GOODELL-PRATT

1500 GOOD TOOLS

No matter what kind of a tool you want—call for it by this name—Goodell-Pratt. That name has stood for quality for many, many years and has an immense following among the best skilled mechanics—men who know. There's a tool for every mechanic's need in the Goodell-Pratt line.

Write for Complete
Illustrated Catalogue

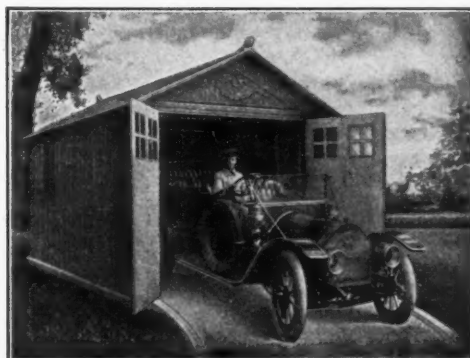
Goodell-Pratt Company

Toolsmiths

Greenfield - - - Mass.



Mr. Carpenter You Can Make a Lot More Money



An Agency for the METAL SHELTER CO., Inc., will bring you more business, more profits, more customers, better and quicker results all along the line, and it will be

A REAL BUSINESS OF YOUR OWN

Don't wait until someone else gets the agency for our garages, cottages, bungalows, stores, etc., etc.

It is easy to sell them and easy to set them up—a building a day. An investigation will cost you nothing. Write NOW for our descriptive circulars and proposition.

Metal Shelter Co., Inc.

Whitehall Bldg. New York City

Here is the Weatherproof Cannon Ball Barn Door Hanger—

Here's the hanger that appeals to every consumer who sees it. It is a big step in advance and is setting a new sales mark.

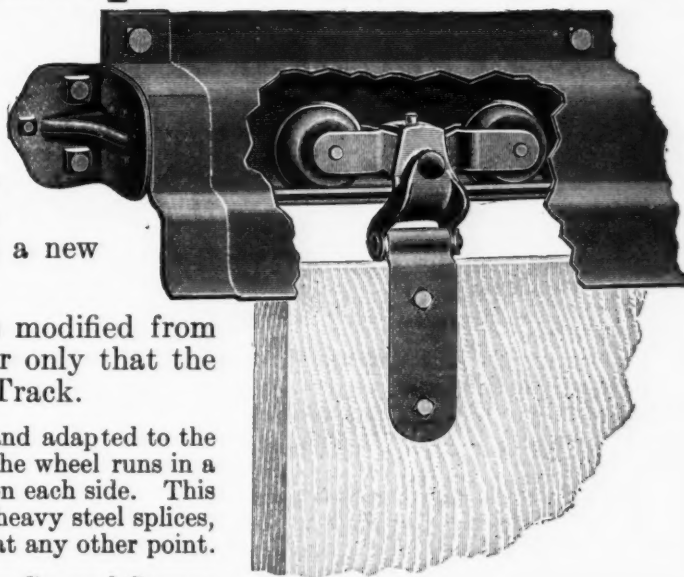
The tandem and flexible hanger is modified from the old reliable Cannon Ball Hanger only that the stirrup is shaped to conform to the Track.

The track is our latest design, is V-shaped and adapted to the Cannon Ball Hanger wheel. The bead of the wheel runs in a groove and the wheel has an even bearing on each side. This track is made of heavy steel provided with heavy steel splices, making it just as strong at the splices as at any other point.

The cover is the same identical cover used on Covered Cannon Ball Track construction and is the only perfect track cover obtainable, since it not only completely encloses the Hanger and Track but also extends down below the top of the door and makes a tight closure.

We also call attention to the fact that Weatherproof Cannon Ball Hangers are equipped with a Track Cleaning device which automatically removes obstructions of any kind from the groove of the Track, making it self-cleaning.

HUNT, HELM, FERRIS & CO., 304 Hunt St., Harvard, Ill.





(Photo, courtesy of Chicago Daily News.)

Court of New Business Square at Lake Forest, Ill. (Chicago), Nearing Completion Behind the Old Business Section, which is to be Razed.

is torn away, the new section will stand revealed in all its symmetry and beauty.

The buildings, directly west of the Chicago & Northwestern railroad station, are grouped about a court, which will open at the east end in front of the railroad station. Thru the middle of the court runs a park, which has been dedicated to the city. At the entrance to the park will be an ornamental stone fountain. At the opposite end is the white colonnade of the west building, while on either side are the lines of symmetrical brick and stucco store buildings.

The outstanding feature of the group is the two towers following the style of the old towers of Munich and Nuremberg. The sun dial tower, forming a part of the north building, rises to a height of 90 feet. The clock tower opposite it, in the south building, is twenty feet lower.

There are twenty-eight stores in this block, the interiors of which are in harmony with the architectural artistry of the exteriors.

Berger's "Classik" Steel Ceilings are used in all these stores because of their beauty and safety.

The Farmer's Friend CUP ELEVATOR

Differs from all Others

Does not dip the corn up, but throws it direct into the cups so there is no chance of shelling any corn or bending up the cups or jerking.

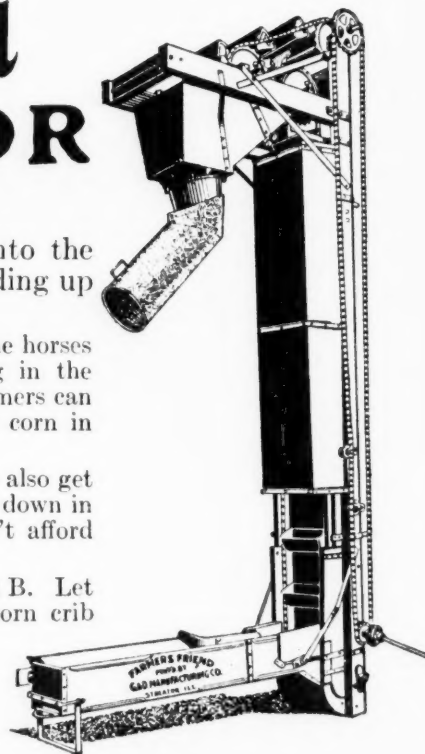
And no matter how slow the power is geared, or how fast the horses walk, it will not carry any corn over; but delivers everything in the hopper so there is never any choking down at the boot. Farmers can unload over sixty bushels of oats in one minute's time, and ear corn in proportion.

You select the elevator that goes in your building, but you also get the blame if the elevator isn't what it ought to be, and falls down in service. On your selection depend future business. You can't afford to overlook the Farmer's Friend.

We have a special agent's proposition for readers of A. C. & B. Let us tell you how you can make extra profits on your future corn crib and granary jobs.

Write today for catalog and special Builders' offer

G. & D. Mfg. Co., Dept. H, Streator, Ill.





MEYER

Cup Elevators

Mr. Carpenter, get one of our free catalogs and acquaint yourself with the merits and advantages of our machines. We furnish the boot and head assembled as near as consistent, sections bored, etc., making the elevator nice and easy to install.

Write today for Free Crib Plans

A. F. Meyer Mfg. Co.
Dept. 301 MORTON, ILL.

Don't Order Wall Ties—Order

Whalebone Wall Ties

The Quality Tie with the Bull Dog Grip



If your dealer cannot supply "WHALEBONE," wire at our expense the following:

(Name of dealer) can't supply Whalebone. Express } (number) boxes. (Your name.) Freight }

We will ship same day from our factory or from the nearest dealer handling. Samples mailed upon request.

Allegheny Steel Band Co.

886-888 Progress St.

N. S. Pittsburgh, Pa.

Get FREE Plans

of this Modern Crib with the Famous

National Giant Inside Elevator



Used
With or
Without
Cupola

The
Latest,
Best and Most
Sensible Inside
Machine Ever Invented

Carpenter-Contractors drop us a postal, please, and we'll be glad to tell you how to make big extra profits by recommending and installing our **National Giant Bucket Elevators** in your crib jobs.

The "National Giant" has more desirable features for you to base your recommendation upon and more sensible features for the FARMER than can be found on any other make of inside grain elevator. Why? Because on cribs 28x38 ft. or less, with half pitch roof, it is not necessary to have a cupola. Saves the farmer money. When cupola is necessary, we can save the farmer from \$15 to \$30 with the National Giant. Ask us why, please. We also save the farmer the cost of digging a pit, and on the length of elevator required. The "National Giant" leaves the corn on the cob, where it belongs; more money in the farmer's pocket.

Get Full Details of Proposition to Carpenter-Contractors

Ours is a good proposition for you and the farmer. It will pay you to look into it. It will bring in more business, greater profits for you. One satisfied customer will bring you many more crib jobs. Write us today—we will give you full details and assist you in any way with plans, specifications, etc. Write now for full details.

Portable Elevator Mfg. Co., 854 East Grove St. BLOOMINGTON, ILL.

OLMSTED'S IMPROVED MITRE BOXES

Wood and iron, with adjustable saw guides. Suitable for any cross cut or back saw. Insures perfect mitres. Carefully made. Several styles. Prices very reasonable. Write for circular.



Olmsted's

Tool Grinder and Sharpener

No foot power required. Guide rests for tools, etc. Requires no skill for operating—does rapid work. Ask for further particulars.

L. H. OLSTED'S SON Hasbrouck Heights, N. J.



The Caldwell Auger Bit is an Efficient Tool

To the ordinary user, all bits are much alike until they are put into use. When this is done the superiority of The CALDWELL is evident.

This is because of the exclusive mechanical features in its construction.

The construction, as shown in detail in illustration, enables The Caldwell to work several times faster and with less friction than any other known bit.

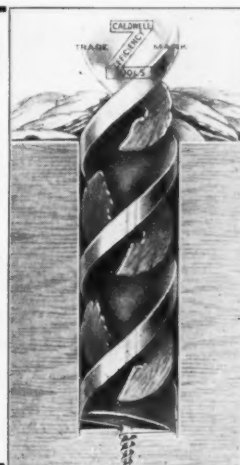
Regular Prices 4 5 6 7 8 9 10 11-12 13-14 15-16ths

35 35 35 40 40 45 50 55 60 65 —cents

COMPLETE SET OF 13 BITS, \$6.00

Until your dealer is supplied, remit direct to us. We will deliver without further cost to you. Send for Catalog.

The CALDWELL AUGER BIT CO., Lebanon, N. H.





Don't Pull the Cat Across the Carpet by the Tail

"I mind, one winter's night, the old woman says, 'Tim,' says she, 'be sure to put the old cat out before you come to bed.' Old Tab was a layin' on the carpet in front o' me an' I reached down an' ketched a holt of her by the tail, bein' about the most convenient part o' her to git a holt of, and started to take her out to th' back door, but she stuck all o' her claws into th' carpet and squalled and spit, an' the ol' woman says, says she, 'Tim, you brute, what you doin' to that poor dumb beast,' an' finally I jest had to take the cat by the neck an' pick her up to get her out a-tall.

"An' I says to myself, 'Tim,' says I, 'let that be a lesson to you; go at things right and don't never try to pull the cat across the carpet by the tail.'

"An' it was just the same way with a contractor I worked for onct. He went an' bought a lot o' things that was said to be wheelbarrows, just becuz they wuz a little cheaper 'n STERLINGS, an' befor he'd had 'em a week they wuz screechin' an' squallin' an' breakin' down an' wearin' out the men that wuz a pushin' 'em, an' he never did have no luck 'till he sold 'em to a junk man an' got a lot of STERLINGS.

"An' that's jest the way with everything. It's a whole lot better an' cheaper in the long run to do things right while ye'r a doin'.

TIM TRUNDLE."

Sterling

Barrows are right. Oil-impregnated fiber bushings for wheel bearings make STERLING BARROWS self-lubricating. No squeaking; no oiling nuisance to gather dust, sand and dirt and grind out the bearings. STERLING BARROWS run easier, last longer, carry heavier loads, yet they are not expensive after all.

Send for Our Catalog No. 19

STERLING WHEELBARROW COMPANY

6207 Shenners Ave.

West Allis, Wis.

Makers of Patented Ribbed Channel Steel Foundry Flasks, Snap Flasks Skim Gates, Wedges, Foundry and Contractors' Wheelbarrows and Carts, General Wheelbarrows, Trucks, Carts, etc.

Wall Board Successfully Duplicates Natural Wood Paneling

Perhaps with but one exception there is no new use for wood fibres that have made such rapid development in the United States in the past ten years as its use for wall boards. It is stated from what is considered good authority that the consumption of wall board in the United States for the year 1915 was probably in excess of 480,000,000 sq. ft.

The use of wall boards for interior work in place of laths and plaster would almost appear to be a new principle in building, and to a certain extent it is. At the same time we find that the Japanese have employed a board for partitions for perhaps hundreds of years. The Japanese made their boards from a very strong fibre which they obtained from the tough inner bark of six species of deciduous trees, this inner bark having long, tough, fibre cells. The bark most in use by the Japanese is taken from the mulberry tree. In order to obtain the fibres the bark is boiled in hot water to separate the outer bark from the inner bark. The inner bark is then dried and bundled and shipped to the board maker. The method employed by the Japanese for reducing the inner bark to the pulp form is very primitive. They employed a crude mallet with which they beat the bark against a flat surface like a flat stone until it is reduced to a pulp. It is then subjected to further beating in water to thoroughly separate the fibres, after which the usual methods of making board by hand are employed. This process was introduced into Japan, 610 A. D., from Korea.

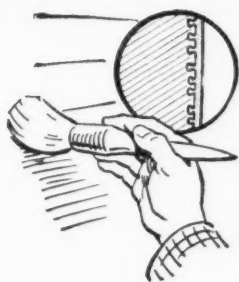
During the development of the wall board industry in the United States the principal raw material used has been mechanically ground wood pulp, and old papers. It is, therefore, in line with progress that improvement should develop both in the raw material used and in the method of construction; and it is interesting to note that one of the most recent developments in wall board, known as "Fiberlic," which appeared on the market some two and one-half years ago, has followed to a certain extent the raw material employed by the Japanese. In place, however, of the fibre obtained from the inner bark, this modern process uses the fibre obtained from the root of the tree. The process of reducing the root is distinctly modern, for in place of the crude method employed by the Japanese the modern method employs chemicals, and the root fibre is put through a process that removes all the pith starch matter, and all other vegetable matter natural to the fibres, leaving what might be termed a commercially pure cellulose; that is, as one authority states, the plant structure.

At a recent convention an exhibition prepared by one of the largest varnish and stain manufacturers in the world showing what can be accomplished with this synthetic wood made from root fibre attracted the attention and comments of all, and the fact that panels 10 to 12 feet in length could be made to reproduce the old English and Dutch panels of one to two hundreds years ago proved that the effects so much desired by the architect, interior decorator, and builder, were available. The many possibilities for this new product is evident. It is well adapted for use in churches, theaters, and public houses for both walls and the ceilings for commercial houses where wood panel effects for the office and windows are desired, and last and most important, the home builder will well appreciate what this all means when he realizes that the wood panel effects so much desired are now available at prices that vary from 66⅔ per cent to 150 per cent less than the cost of the wood veneer panels, and in widths and lengths that were only available many years ago when large trees were the rule and not the exception.

For further information address the Fiberlic Co., Camden, N. J.

LEAD PAINT

Dovetailed On



PURE white lead is metal lead in another form. Under a blow-pipe flame, it returns to the metallic state.

A building painted with strictly pure white lead and pure linseed oil, like

Dutch Boy White Lead

and Dutch Boy linseed oil, is sheathed in a solid coating which, while not lead, is derived from this durable metal and has many of its characteristics.

This lead-like sheet, instead of being nailed on, might be said to be dovetailed fast, for it is held by thousands of tiny tentacles of the coating material itself. It is only as thin as paper but plenty thick to withstand the extreme changes of wet and dry weather and of burning heat and biting cold.

Folders Our handy, general painting specifications and useful chart of color combinations should be in your catalogue file. Write nearest branch for Folders "A".

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\$2 a Box SPECIAL OFFER—BY MAIL ONLY



3 DURO Guaranteed Shirts sent post-paid on receipt of \$2. Hand-some tie included for names and addresses of 5 friends. You owe your pocketbook a trial of this famous box of shirts guaranteed not to shrink, fade or rip in 6 months' wear or new shirts free. Made of fine white percale with neat stripes of blue, black and lavender. One shirt of each color same size to the box. Cut in the popular coat style, cuffs attached, hand laundered and very fashionable. Sizes 14 to 17. If not satisfactory on arrival we

will gladly refund your money. Highest Bank References.
GOODELL & COMPANY, Room 222, 158 East 34th St., NEW YORK
Largest Mail Order Shirt House in the World



All-paint paint—or half-paint paint?

We make this offer: Paint one-half of any house DEVOE; paint the other half whatever you like.

If DEVOE doesn't take less gallons and cost less money, we'll make no charge for DEVOE.

If DEVOE doesn't wear a year or two years or three years longer—longer and better—we'll give you enough to do it again.

DEVOE

The oldest manufacturing concern in the United States.
Founded in New York 1754.

F. W. DEVOE & C. T. RAYNOLDS CO.
New York

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Chicago

**PAINT
DEVOE
PAINT**

Comfort Indoor Closet

Odorless Sanitary Germ-Proof

Every home without sewerage needs one. Put a warm Comfort Toilet in your home, a guarantee of healthy, sanitary conditions. A boon to sick people. Can be placed anywhere in house.

Fly Breeding Can Be Destroyed

Help "Swat the Fly"—Have City Conveniences. Germ-life killed by chemicals in retort. Emptied once a month—no trouble. Needs no other attention. Boards of Health endorse it. Write now for literature, prices, etc.



SENT ON 30 DAYS
FREE Trial

Agents Wanted—Exclusive Territory.

COMFORT CHEMICAL CLOSET CO. 306 Factory Bldg.
TOLEDO, OHIO

In every summer cottage you build

—you can install, at a profit, a Ro-San Indoor Closet



Absolutely
Odorless

Every building—home, cottage, store or office—that has no sewer connection needs this modern sanitary indoor closet. Absolutely odorless. Act as our agent—this fixture sells easily to your customers—good profit. Hundreds of carpenters represent us. We also distribute through builders the

Ro-San Washstand

Provides Running Water, Hot or Cold, Without Plumbing. Every housewife wants one. Convenient, sanitary. Sells readily with little effort. Carry this work along with your regular business. Ask for terms to agents.

Rowe Sanitary Mfg. Co., 680 Rowe Bldg., Detroit, Mich.

New Roll Shingles Will Boom Roofing Business

There are a number of home owners who never heretofore would think of using roll roofings to cover their homes because they felt that the artistic value of a roll roofing was practically negligible. It is of uncommon interest then to this class of roofing users to know that a truly beautiful, dependably made roll roofing is now obtainable in the new Flex-a-Tile Roll Shingle patented and exclusively manufactured by the Heppes Company, Chicago.

This new Flex-a-Tile Roll Shingle is really a regular full size 32-inch wide roll of individual asphalt shingles. It is said to give all the beautiful appearance of a high-grade asphalt shingle roof, combined with the economy of roll roofing inasmuch as the asphalt shingle effect is obtained with no greater cost than with roll roofing.

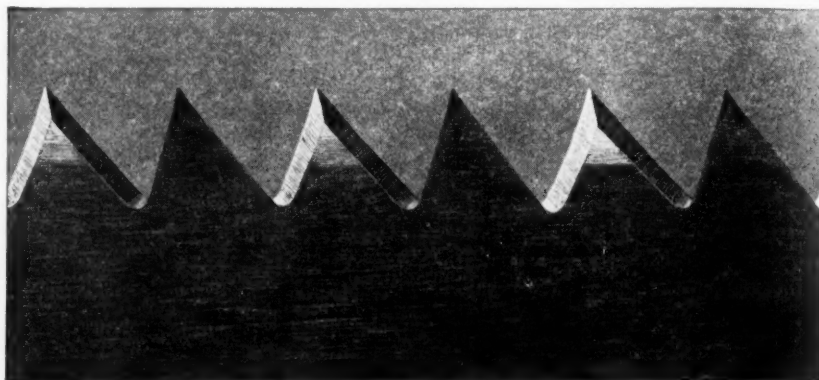
It is unusually advantageous to the industry in general that this new Flex-a-Tile Roll Shingle has been put on the market just at this time when the roofing season is opening in earnest, and thousands of new jobs are being let. The roofing contractor or dealer has only to describe this new Flex-a-Tile Roll Shingle to his customers, in order for them to recognize its advantages and to place orders for its use.

Anyone interested in obtaining more complete information about this new Flex-a-Tile Roll Shingle, together with prices and samples, can secure all the details by simply addressing the Heppes Company, 1010 Kilbourne Ave., Chicago.

What Do You Know About Saws

Do you know how a saw is made, or why it cuts? Have you ever given it any thought?

Being so universally and extensively used for many years, the saw has become such a well known object that its very familiarity seems to have dulled the sense of its true value and importance.



This Enlarged View of Crosscut Teeth Plainly Shows Their Actual Shape, and Tho the Illustration on Page 152 Seemingly Appears to be Another Style, it is a Photographic Enlargement of the Same Crosscut Teeth from Another View-point—Looking on the Cutting Edge at an Angle of About 45 Degrees, which Brings Out in Pronounced Manner the "Set" of the Points on Each Side.

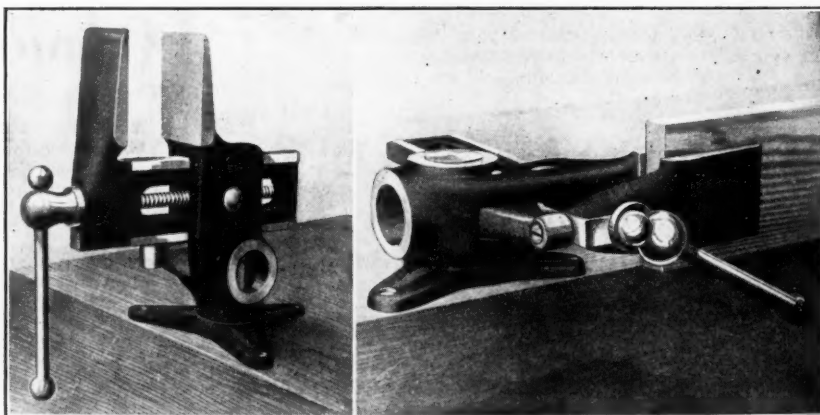
As a matter of fact, the saw has ever been one of man's greatest helpers in the march of civilization, his most powerful and efficient assistant in the making of progress, in providing comfort and conveniences. It is the agency by which the scope of achievement has been immeasurably widened, enabling the accomplishment of greater and more difficult tasks with a corresponding lessening of human effect and toil.

(Continued to page 152.)

We have at last a Vise that is good enough for the House Carpenter

THE Carpenter Vise swings perfectly free on its base in any of its many positions. The

workman places his work in the vise in the best position for working to get the best light, with his body in a natural position so that he can work direct from the shoulder. The vise locks automatically in any position. This means greater efficiency for the workman, increased output, better and truer work with less labor. This tool is a profit booster for the contractor, a labor saver for the workman. If your hardware dealer cannot show you a vise in action send for full information direct



THE WILL-BURT COMPANY, Orrville, Ohio



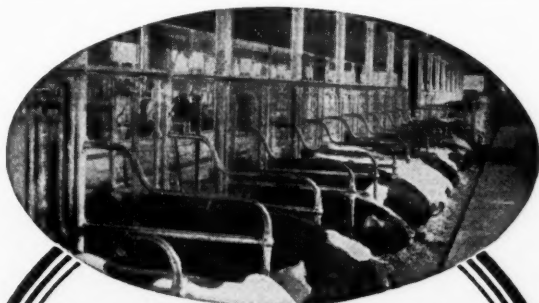
Builders Need a Trailer THAT WILL TRAIL

Auto filled with passengers—trailer loaded to capacity—rush job ahead. Quick, short turn out the gate—around corners like a flash, over rough, muddy roads until the journey is ended. Your mind on the road ahead—no thought of the trailer behind—if it was a

SIMPLEX SHORT TURN TRAILER

—the only popular priced trailer constructed with the famous SHORT TURN GEAR—the only trailer scientifically made to follow the trail—no matter where that trail goes. Therefore it is the only trailer that actually does "trail" under all conditions.

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1200 Meridian St., Anderson, Ind.



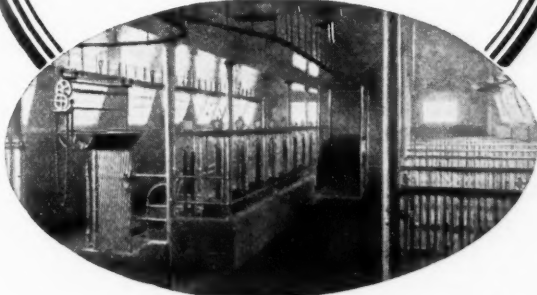
Thousands of barns have been made more sanitary and comfortable, and thousands of dollars have been saved in labor by the installation of our

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Get our catalog, "Modern Stable Equipment," for study and reference. Full of helpful suggestions and complete details of our equipment.

GLOR BROS. & WILLIS CO.

90 East Main Street
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Waterproof Moistureproof Stucco

There is only one way by which you can be absolutely assured that rain or moisture will not percolate through cracks in the stucco, make the stucco fall off, penetrate the wall and ruin the interior, as occurs in cement, lime and other exterior coatings, and that is by using the one water-proof, moisture-proof stucco,

KELLASTONE

IMPERISHABLE STUCCO

In the first place, Kellastone does not crack or shrink from window and door casings, and is not subject to the great expansion and contraction which causes other stuccos to crack, allowing water to enter. Add to this its remarkable impermeability to water and moisture, and resistance to heat and cold, and you have the one practically indestructible seal, the one perfect exterior coating for any home or building. Kellastone will "give" to stresses and to the normal settling of walls. It adheres with extraordinary tenacity to wood, brick, tile or stone. It is proof against the results of extreme changes in temperature, and it is fire-proof. It is the only dependable stucco. Used by the U. S. Government, railroads, hospitals and homes everywhere, and for renovating and overcoating old buildings.

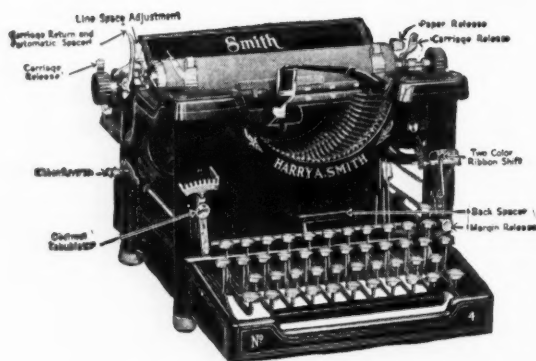
Kellastone Composition Flooring solves the flooring question for schools, hospitals, factories and homes, being superior to concrete, tile, wood or rubber-tile, because it has no seams, joints or cracks, deadens sound and is practically indestructible.

Send for illustrated proven facts today.

The National Kellastone Co.

504 Association Bldg., Chicago, Ill.

Kellastone Mfg. Co., 412 Union Oil Bldg., Los Angeles, Calif.,
Licensed Distributors for California.



TYPEWRITER SENSATION!

Free Trial—Use as You Pay

Send Me Only \$2.00 a Month Until the Low Total Price of \$34.15 is Paid, and the Machine is Yours

This is absolutely the most generous typewriter offer ever made. Do not rent a machine when you can pay \$2.00 a month and own one. Think of it—Buying a \$100.00 Typewriter for \$34.15. Cash price, \$32.30. Never before has anything like this been attempted.

Standard **SMITH** Model Visible No. 4

Perfect machines, Standard Size, Keyboard of Standard Universal arrangement, 42 keys writing 84 characters—universally used in teaching the touch system. The entire line of writing completely visible at all times, has the Decimal tabulator, the two-color ribbon, with automatic reverse, the back spacer, ball bearing carriage action, in fact every late style feature and modern operating convenience. Comes to you with everything complete, tools, cover, operating book and instructions, ribbon, practice paper—nothing extra to buy. You cannot imagine the perfection of this beautiful typewriter until you have seen it. I have a thousand of these perfect late style Model No. 4 typewriters at this bargain price, and each purchaser fortunate enough to secure one of these beautiful machines must try it out in home or office before deciding to buy. I will send it to you F. O. B. Chicago for five days' free trial. It will sell itself, but if you are not satisfied that this is the greatest typewriter bargain you ever saw, you can return it at my expense. You won't want to return it after you try it—you cannot equal this wonderful value anywhere.

You Take No Risk—Put in Your Order Now

When the typewriter arrives deposit with the express agent \$6.15 and take the machine for five days' trial. If you are convinced that it is the best typewriter you ever saw keep it and send me \$2.00 a month until my bargain price of \$34.15 is paid. If you don't want it, return it to the express agent, receive your \$6.15 and return the machine to me. I will pay the return express charges. This machine is guaranteed just as if you paid \$100.00 for it. It is standard. Thousands and thousands of people own and use these typewriters and think them the best ever manufactured.

The supply at this price is very limited, the price will probably be raised when my next advertisement appears, so don't delay. Fill in the coupon today—mail to me—the typewriter will be shipped promptly. There is no red tape. I employ no solicitors—no collectors—no chattel mortgage. It is simply understood that I retain title to the machine until the full \$34.15 is paid. You cannot lose. It is the greatest typewriter opportunity you will ever have. Do not send me one cent. Get this coupon in the mails today—sure.

HARRY A. SMITH, Room 721, 231 N. Fifth Ave., Chicago

-----Tear Out—Mail Today-----

H. A. SMITH, Room 721, 231 N. Fifth Ave., Chicago, Ill.

Ship me your Model No. 4 typewriter F. O. B. Chicago, as described in this advertisement. I will pay you the \$28.00 balance of the SPECIAL \$34.15 purchase price, at the rate of \$2.00 per month. The title to remain in you until fully paid for. It is understood that I have five days in which to examine and try the typewriter. If I choose not to keep it I will carefully repack it and return it to the express agent. It is understood that you give the standard guarantee.

Name.....

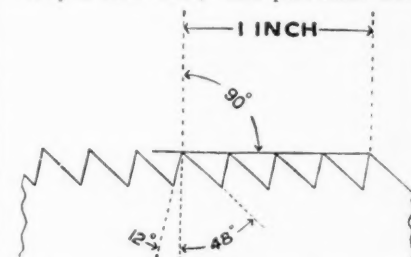
Address.....

The results of its work are seen on every hand, wherever you may go. Think of what the conditions would have been without the aid of the saw, and then, only then, will you begin to realize some degree of its real importance and the wonderful part it has played in the world's up-building.

Tho a handsaw consists of but few parts, and its making appears to be a simple matter, yet this latter is far from the actual fact.

A full understanding and appreciation of the work involved in its manufacture can be gained only by a personal trip thru the works, where, step by step, in gradual development from crude, raw material, changed and refined in fiery furnaces, transformed under monster rolls, shaped and formed by an army of expert mechanics of long experience aided by a multitude of machines, there finally emerges a beautifully finished, efficient article of utility, its evolution bearing high tribute to the handicraft of man and creating a lasting impression.

So that some conception may be had and to obtain proper recognition of the true value of the saw, the principal operations are explained at length in a booklet, entitled "How a Disston Handsaw is Made," and in a recent production, a finely printed twelve-page pamphlet, on "Why a Saw Cuts," this particular sub-



Angles of Crosscut Teeth 1/4-Inch Space or Five Points to Inch.

Compare this Photographic Enlargement with the One on Page 150.

ject is specially illustrated and described, demonstrating that the cutting action of a saw is based on scientific principles, bringing out new and astonishing facts which few ever before realized.

Both the above publications, well worth reading, will be sent free on request, by Henry Disston & Sons, Incorporated, Keystone Saw, Tool, Steel & File Works, Philadelphia, Pa.

✦ New Cornell Circular

A handsome color folder illustrating the uses of Cornell-Wood-Board, an excellent material, has just been issued by the Cornell Wood Products Company of Chicago and Cornell, Wis.

The folder is unusually attractive and contains information on the finishing of walls and ceilings.

All of the illustrations in the booklet are reproduced from actual photographs. They comprise a variety of interiors, showing the practical and decorative advantages of the board. Each view carries explanatory notes, etc. A sample of Cornell-Wood-Board is enclosed with folder.

If you would like to receive this write the Cornell Wood Products Company, Insurance Exchange Building, Chicago, Ill.

For every one who wants the best drawing pencil

VENUS

SMOOTHNESS and ease of writing, an entire absence of scratchiness, a standard uniformity, a strong non-breaking lead, long life, these are but a few of the qualities that distinguish the famous

VENUS 10¢ PENCIL

IF you want a heavy soft lead, it's ready. If you want a thin delicate line you can have it. The 17 degrees of Venus, from 6B softest to 9H hardest satisfy every need.

Insist on Venus, with the distinctive Venus water mark finish. At all dealers.

FREE—Box of Venus Samples for Test. WRITE FOR IT

American Lead Pencil Co.
212 Fifth Avenue, NEW YORK
and Clapton, London, England

with the mortar...
crete to be mixed in batches and immediately
rammed until...
2. The cement to be true, well-seasoned, Portland cement, which has been used in important work, and has remained in same at least three years without showing signs of deterioration, and which is approved by the Architect
3. Cement which is damaged in a damaged condition, or which is damaged at the site, shall not be used, but must be removed from the work promptly.

Alpha

One Word Covers It

Because ALPHA Cement is guaranteed fully to meet standard specifications. Every pound is true, high-grade Portland Cement—great in binding power and tensile strength.

Because ALPHA during the last 25 years has been used in scores of important works such as the Galveston Sea Wall, the great Catskill Viaduct, the Pennsylvania Railroad Terminal and Tunnels in New York, etc., where concrete is called upon to withstand the severest tests.

Because ALPHA is tested hourly by expert chemists. Under this system no cement lacking in binding power can leave an ALPHA plant.

Write for the ALPHA Book and Art Envelope No. 10 which contain valuable information about concrete work and show views of many notable concrete structures.

ALPHA PORTLAND CEMENT CO.
General Offices: Easton, Pa.
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The Finger-Cling

Patented Bond Anchor for Brick Walls

THE Finger-Cling bonds every course, including the outside course, to the joists and frame of the building. It fits flat between courses. Note how the fingers cling to the heart of the wall. Mortar hardens in the loops, making the bond part of the wall. The Finger-Cling bond is light, and easily handled, but has enormous tensile strength, being made of fine steel. Made flat and with right angle twist, so that they may be used on the top or sides of joists.

Much cheaper than any other bond, and more effective, because **they bond every course**. Specified by leading architects; used by best builders. Write for list of users, prices, and terms.

Steel Security Bond Anchor Co.
712 Broadway Gary, Ind.



Here's YOUR Chance to Learn DRAFTING

This Complete \$15 Drawing Outfit and **FREE** Full Instructions in Mechanical Drawing



There's a good job waiting for you. The country is facing greater prosperity than it has ever before experienced. Far-seeing men are getting ready for boom times. Get this training now and share in the coming prosperity.

A WONDERFUL CHANCE for Carpenters, Bricklayers, Plasterers, Foremen, Superintendents, Contractors and all other men in Building Lines.

STUDY AT HOME Devote your spare hours for a short time only and get in the class drawing the big pay envelope. Hundreds of men are in daily attendance at this old established college. In your own home you can do the same work these men are doing, and the same experts that teach them will guide you toward the big job. They will prepare your instruction matter. Your work is examined and approved by them. No books to sell. Live, up-to-date blue prints of work in actual construction. These men know exactly the practical training you need because they are in constant charge of big work.

ACT NOW—FILL OUT COUPON TODAY

Mark "x" opposite work in which you are interested. Without obligation on you we will send full information.

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| <input type="checkbox"/> Architectural Drafting | <input type="checkbox"/> Plan Reading |
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College or Home-Study Course

CHICAGO TECHNICAL COLLEGE
1017 Lake View Building, Chicago, Illinois

Chance to Sell Household Necessity

Many carpenters and builders have found that it is very profitable to handle various kinds of specialties that are of value in a house. In their work they have an unusually good opportunity to sell such articles without wasting time, and at a nice profit for themselves. The possibilities in such a line with a specialty that has good features depend entirely on the man's energy who is handling it.

An unusually good opportunity is offered in handling the "Easy-Wringer" mop that is made by the U. S. Mop Company, 373 Main St., Toledo, Ohio. It has many features that will recommend it to the housewife. That its usefulness is appreciated is shown by the records that have been made by some of their agents. The company claim that it is not necessary to develop a selling talk for the product as its unique and labor-saving features will sell it on sight.

The particular part of the mop that attracts attention at first is the wringing device. The mop does not have to be touched with the hands at any time. There is a crank extending out over the handle of the mop that is connected to the mop thru beveled gears and a hook. The turning of this crank twists the mop and effectually wrings it.

The U. S. Mop Company are offering exclusive territory to our readers which will protect them if they wish to handle this proposition. More complete details and information can be secured from this company. Request should be directed to the address given above.

For the Walls of Summer Cottages, Camps and Bungalows

On account of its not requiring any painting or further decorating of any kind Neponset Wall Board has always been advertised extensively by Bird & Son as an ideal material for finishing off the walls and ceilings of summer camps, where economy is an important consideration.

The surfaces of Neponset Wall Board have been waterproofed so that from a strictly practical point of view no sizing or painting is necessary. The board is then finished in two styles, quartered oak and cream white. Every sheet that leaves the mill is therefore all ready for use without any further expense on the part of the user.

Note the following from a leaflet:

"It is in camps, cottages and bungalows that a large use has been found for Neponset Wall Board. In buildings of this sort economy is usually a chief consideration, also ease of application, as it is often put up by the owner.

"Neponset Wall Board fills both of these requirements. It eliminates the cost of papering or painting, but it should be remembered that the surface of the cream white finish is especially suited to take paint and can be decorated in any way desired.

"And if it is painted, again there is an economy, because the waterproofed surfaces of Neponset Wall Board require

(Continued to page 156.)

SAN-TI-LITE

Easy to Lay

THE all mineral Composition floor material that is the standard from coast to coast. Sold only to builders and contractors under positive guarantee.

The best all purpose sanitary floor in the world. Attractive profits. Write us today for samples.

THE SANITARY COMPOSITION FLOOR CO.
166 PLUM STREET

SAN-TI-LITE

Easy to Lay

SYRACUSE, N. Y.

Berger's Pressed Steel Cores Reduce Dead Floor Load



BERGER'S Pressed Steel Cores, for both light and heavy long-span construction, are extensively and effectively used for concrete floors.

They are designed to give the greatest strength and displacement for the least amount of weight and cost, at the same time making a great saving in concrete reinforcing steel, centering and labor—also materially reducing the dead floor load.

Made from sheet metal, formed from one piece and corrugated, making them very rigid and stiff. We make both permanent and removable cores in several sizes, depths and gauges. They can be used in any type of steel frame or reinforced concrete construction.

Write for full particulars and copy of Handbook L. A. B.

THE BERGER MFG. CO., Canton, O.

BRANCHES: Boston, New York, Philadelphia,

Chicago, St. Louis, Minneapolis, San Francisco

Export Dept.—Berger Bldg., New York City, U.S.A.

Stearns

No. 10



Try This Scraper on Your Floors at Our Expense

Here's a Scraper that scrapes clean and smooth, in the corners, close up to the walls, and scrapes without those wavy lines so often caused by "chatter". Our knife with double edge wears twice as long as any other Scraper knife. Our adjustable handle, rubber tires and the way the weight is thrown on the knife are all exclusive features of the Stearns No. 10.

We don't ask you to "beware of other Scrapers", but we do ask you to accept this machine on a fifteen day FREE TRIAL OFFER, so you may "compare it with other Scrapers," for by test the Stearns is best.

There are fifteen days in which you can test its easy running, smooth shaving and sturdy qualities at our expense.

Write us about it.

Sold by dealers, direct from the factory or on fifteen days' trial. Particulars will interest you.

E. C. STEARNS & CO.

500 Oneida St.

Syracuse, N. Y., U. S. A.



THIS IS THE HAMMER WITH THE PEDIGREE

OF COURSE
IT'S A

**GERMANTOWN
MASTER BUILDER**

Expert workmen the country round know and use this hammer. The finest possible quality in material, design and workmanship. Octagon shaped handle of second growth hickory, ideal hardness, and a claw that will grip all size nails with a grip that holds. Positively the **only** hammer for the workman who wants the BEST. Three sizes, Nos. 745, 11 oz., 746, 16 oz., 747, 20 oz., at \$1.00 each.

**Price
\$1.00**

Germantown Tool Works

PHILADELPHIA, PA.

Branch: 62 East Lake Street, Chicago



Note how the Stanley Garage Door Holder does its duty: holding the door open against the strongest gusts of wind: yet a slight pull at the chain leaves it free to close.

THERE'S an interesting book telling you about the hardware to be used on garages you build—whether they be simple or elaborate.

Ask for your copy. It is called

Stanley Garage Hardware

It is carefully illustrated and describes hardware suitable for all types of garages: wood, stone, concrete, etc.

We particularly want you to know about the Stanley Garage Door Holder No. 1774, featured in illustration above.

It is strong and simple in construction, holds the door open, preventing damage to car lamps, bending of the fender or scratching of paint.

Send for the Book today. Stanley Garage Hardware may be had of most hardware dealers.

Stanley Works

New Britain, Conn., U. S. A.

New York
100 Lafayette St.

Chicago
73 East Lake St.

only one or two coats of paint at the most. It does not soak up paint as an unwaterproofed board would do.

"The ease of application as compared to plastering is obvious to any one."

Circulars giving more details of Neponset uses and construction can be secured from Bird & Son, Department C, East Walpole, Mass.

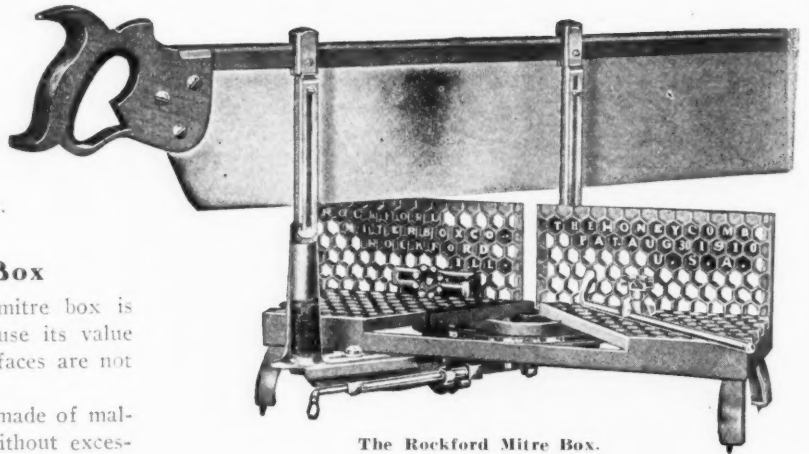


The Honeycombed Mitre Box

One of the most important features of a mitre box is rigidity. It must not warp out of shape because its value will be reduced to a large extent if all the surfaces are not absolutely straight.

The frame of the "Honeycomb" mitre box is made of malleable steel and can be made thick and rigid without excessive weight due to the honeycomb construction. The backs are fitted separately to the frame, which is claimed to be a further protection against warping. Also if the back is accidentally broken, the whole box will not be wasted, but a new back can be secured.

The makers of this mitre box, the Rockford Mitre Box Company, also make a mitre box saw that requires no setting. It is ground from a plate of steel equal in thickness at the teeth to the set of the mitre box saw, and back of that is



The Rockford Mitre Box.

reduced to standard gauge. Along the top edge is a heavy stiffening piece. This construction stiffens the saw and makes a smooth cut.

Descriptive literature describing this mitre box and mitre box saw can be secured from the Rockford Mitre Box Company, 252 Mill St., Rockford, Ill.



Real Nails and Nailing Demanded for the "Forty-Year or Century" Red Cedar Shingle Roof

If the cedar shingle is the warp and woof of a roof, then surely the shingle nail is the woof. And the cloth is only as good as its poorest thread. So the roof is only as good as its weakest part. Then why not nails as good as the imperishable cedar of the shingle? And why not workmanship the equal of both?

To some extent even your most practical and conscientious mechanic has overlooked the values that he may put in his red cedar shingle roof, and there are too many examples of indifference to the fine points of material and workmanship which should really have been embodied in the finished product—the high quality red cedar shingle roof. It is time to recognize that the roof that is laid in these days of calculated efficiency is a totally different thing from the roof of the "Shingling Bee" days, and the days of "blue steel" nails.

Here is a fine piece of cedar, a perfect gem of a shingle, say just 8 inches or 9 inches wide, a "Perfect," a 5/2s, inspected, not a sign of sap, a good vertical grain shingle, a shingle the great cedar forests of the Pacific could be proud of.

Now does it not seem a shame, and absolutely wrong, to attempt to hold that shingle to its sheathing with a couple of "blue steel" nails?

That fine shingle is good for a century; in fact, truly it will last that long, exposed to the weather, and this without

(Continued to page 158.)



WITTE PRICES GO DOWN AGAIN!

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| 2 H-P, \$29.95; | 3 H-P, \$47.85; |
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Write for Prices on 12, 16, and 22 H-P.

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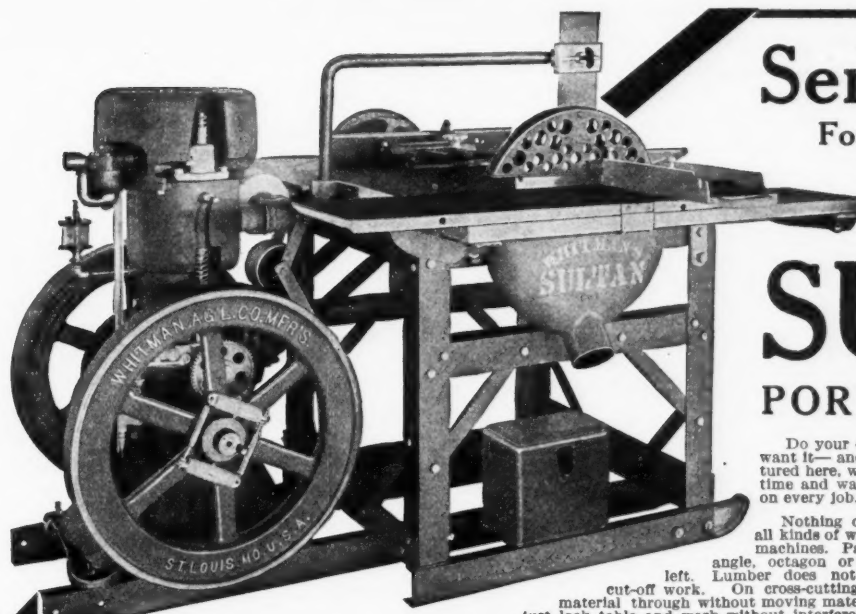
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CLOSED CONTRACT FOR THAT MATERIAL. GREATEST BUY I EVER MADE BUT CASH AND BIG ORDERS TALK. RUSH OUT ADS THIS WILL MAKE WITTE ENGINES THE LOWEST PRICED ENGINES ON THE MARKET AND A BETTER BUY THAN ENGINES AT DOUBLE THE PRICE. PUT IT IN THE AD SOMEWHERE TO WRITE US QUICK AS I DON'T BELIEVE WE CAN HOLD DOWN THESE PRICES LONG. DO YOUR VERY BEST TO GET FOLKS TO WRITE US. IF PEOPLE COULD ONLY REALIZE WHAT BARGAINS THESE ARE WE WOULD HAVE TO DOUBLE THE SIZE OF THE FACTORY.

ED. H. WITTE

WITTE ENGINE WORKS

1779 Oakland Avenue, KANSAS CITY, MO.
1779 Empire Building, PITTSBURGH, PA.



Send Coupon For LOW PRICES On this Wonder-Worker **SULTAN** PORTABLE SAW RIG

Do your own milling. Have your work done when you want it—and as you want it. The SULTAN outfit, pictured here, will pay back its cost in one month in men's time and wages. Will make and save money for you on every job.

Nothing on the market to equal it. Does all kinds of work usually done by two or more machines. Patent gauge is provided for any angle, octagon or hexagon, or mitre right or left. Lumber does not have to be marked for cut-off work. On cross-cutting guide table slides the material through without moving material. Used for ripping, just lock table and work without interference.

Note that Power Plant is behind the saw and not underneath. Keeps engine free from dust and grit. Furnishes power in excess of that required by hardest "pulls."

Ask for our Special Low Price. This Sultan Saw Rig will be a most profitable investment for you. Get the facts NOW. Send the coupon or postal.

FREE

New Catalog
of Sultan Contractor's Equipment

Note This Superior Construction

This Wonder-Worker "Sultan" Portable Saw Rig is built entirely of best grade steel. Frame is very strong, rigid—yet comparatively light and easy to move about. Table is made of charcoal iron casting, heavily ribbed underneath.

Equipment consists of 12-inch Rip Saw, 14-inch Cross-Cut Saw, 8-inch Emery Wheel, 6-inch Cocker Dado Head—cutting $\frac{1}{2}$ to $1\frac{1}{2}$ inch; Boring attachment complete—5-inch cylindrical Jointer Head, 10-inch Sanding Wheel, etc.

Write for low prices and get new catalog of Contractor's Equipment. Send coupon or postal.

WHITMAN A. CO.

7303 So. Broadway

ST. LOUIS, MO.

Whitman A. Co., 7303 S. Broadway, St. Louis, Mo.

Gentlemen:

Please quote me your Special Low Price on Sultan Portable Saw Rigs, also send me FREE catalog of Contractor's Equipment.

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Address.....

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Does not chip or peel like a paint. Impervious to moisture, and positively unaffected by any of the alkalis in cement and brick material.

Adheres naturally to stucco, brick and concrete surfaces, rendering them waterproof, and drying with a soft-toned, pleasing effect.

Ideal as a cement floor coating. Dries hard; proof against oil, grease or water; prevents disintegration of cement, and the annoyance of constant dust.

Write for booklet showing chart of colors, and giving full information.

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You Can Make
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Many are doing \$3,000 a year and better with this new machine. You can, too. **You need no experience.** We teach you FREE in one simple lesson. Start right at home. Everywhere there's plenty of money and big cash profits waiting for ambitious men. Just the thing to bring in the money between jobs, until you get the business started.

This is the Business for You

A business all of your own. Requires little capital and grows fast into a real factory—a real manufacturer. **Open a Tire Repair Shop with Haywood Equipment.** Let the money roll in. Auto tires need mending constantly. There is your profit. Owners eager to give you their business. It means a saving of money to them, and big cash returns for you. If you own a shop now, put in one of these machines and double your profits.



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A valuable guide to power and wealth. It gives the complete details. How to start. How to succeed. Tells all about your opportunity. Shows how easy the work can be done. Shows the big profit in this new field. A postcard will do.

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Gentlemen:—Please send me your book as you promised to do. This of course does not obligate me in any way.

a preservative of any kind. And it is a fact that with the right kind of nails, and the right kind of workmanship in driving those nails, this fine shingle would actually be doing good service for a hundred years. Now a hundred years sounds high-pitched, impractical, flamboyant. Yet we can point to slate roofs that have been up for two centuries, and never disturbed—hundreds of slate roofs have stood a longer test. And why should not red cedar shingles be regarded as great as architects (who think in terms of great durability), have regarded slate, copper, and lead?

It is time to think this over. Red cedar is as lasting almost as copper. Pure iron, the old-fashioned kind, is as durable as time itself, depending on its purity. There is a statue near Delhi, India, made of pure soft iron, that has stood for

2,800 years. There is a bridge at Newburyport, Mass., which has not deteriorated in over a hundred years, made of iron in the old-fashioned way. And pure iron nails can be had today for shingling at a very low cost. Pure iron withstands the chemical action of time, of the atmosphere. Pure iron has had the impurities developed out of it in the making processes, and very largely today pure iron metal lath or its equivalent has replaced steel lath.

Then there is the pure zinc nail, and the zinc-clad nail, the galvanized nail, all modern products, made to give to the cedar shingle world a nail of real value. These nails are practical, long-life nails, and give the red cedar shingle its due. If a roof of highest possible type is wanted, then copper nails are good, and not too good for a good red cedar shingle for a permanent structure. For a high-class residence an architect of reputation would specify copper shingle nails and require the requisite patient labor to drive them—copper nails for fast work are not so practical, being too soft for direct driving.

But assume that we use a zinc-clad, or other 10-cent nail, or other real quality shingle nail. There are actually needed in a square of shingle roof, shingles $4\frac{1}{2}$ in. to the weather, about 1,000 nails. It is a very heavy nail that goes 333 to the pound, and as an average it may be said that 3 lbs. of nails to the square make a fair base for calculation. Say 30 cents per square for nails that will provide the "woof" for the red cedar shingle "warp." If 7 cents per square is the cost for the cheapest "blue steel" nails, then we have here an extra expenditure of only 23 cents per square for high-class nails, of quality to guarantee a "forty-year" or even a "century" roof. When it is further considered that the average residence roof does not exceed twenty squares is it not worth while? Is it not worth investing five dollars more in material?

What happens when the "blue steel" nails are used? They are so thin they have little holding power, very little friction hold. The nail head must not be driven into a shingle—that is bad practice. The old-fashioned cut nails and nails of the shape of these take a sound, proper hold of shingles and sheathing. The slender blue steel nails also, being made of steel, in course of time rust away. A shingle lying awry on a roof is a shingle poorly nailed, with poor nails, the head rusted off and the thin stem partly gone, too, and valueless. The weakest nail goes first. Cut nail or zinc nail head is a protection to the heavy stem of the nail below it.

These points have been given attention in the booklets of the "Rite-Grade" Red Cedar Shingle interests in their campaign for the "forty-year" or a "century" roof, their literature going into detail on the subject of workmanship and nailing. The points are well taken, and are bound to stir up a lot of new interest and ideas on the subject of "Roof Making."

The "Rite-Grade" Cedar Shingle Mills number forty, all in the Pacific Northwest, United States and Canada, associated together for the furtherance of interest in Red Cedar Shingles, standardizing their product under the brand "Rite-Grade," all shingles sold under this name being inspected for quality, no sap, etc., and also a principal purpose of their organization being to educate the building world and stimulate it to a better understanding or appreciation of cedar shingles and methods of applying—for, in a word a more accepted practice and determination to build the "forty-year or century" Red Cedar Shingle roof.



Does the work of ten men

A Machine for all purposes

BERLIN

Portable Woodworking Mill

is the biggest labor-saver you can buy. Because of the present labor shortage, good men are at a premium. Don't let high-priced labor eat up your profits. This mill will do the work of ten men, and soon pays for itself in money saved.

Consists of a Rip Saw, Cross Cut Saw, Dado Saw, Grooving Machine, Jointer, Jig Saw, Boring Machine, Sander and Emery Wheel. Comes equipped with either gasoline engine or electric motor mounted on its own base. Guaranteed for two years. Write for information on this machine.

SCHAEFER MFG. CO.
American St. Berlin, Wis.



Easy to own this good engine

Send for my new money-saving offer, before you arrange to try any engine for any price. Compare my engine with any other; consider my low prices—(easy terms if you wish), and you will see your advantage in having one of my

BAUER ENGINES

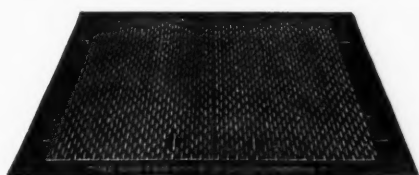
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Sizes, 2, 3, 5, 7, 9, 12 and 16 horse-power. Now sold only direct from my own factory at surprisingly low prices. All sizes, up-to-date, long stroke, valves-in-head, even speed type of engine. Over 20 years ago I made my first engine with my own hands. The thousands of my engines now at work prove that you take no risk when you get a Bauer Engine.

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CANTON SIDEWALK DOORS

Provide a firm foothold in all kinds of weather. The corrugated surface prevents slipping; and there are no projections of any kind on which to trip or stumble.

Canton Sidewalk Doors are made of the highest grade materials and will outlast the walk itself. The frame of the Canton is cast in one solid piece. The top is reinforced diamond plate steel, unequaled for durability, appearance and safety. When open, it has stay rods and chains to protect the opening, and when shut it is absolutely burglar-proof.

And the price is attractive. Write for our catalogs of sidewalk doors—"B-17," coal chutes—"B-4," gratings, and Builders' Iron Work.

Canton Foundry and Machine Co.
CANTON, OHIO



MAJESTIC Coal Chute

Protects the House and Lawn

It prevents the house, lawn, walk, flowers and shrubs from being littered up and ruined with coal dust and stray lumps. It minimizes depreciation on your home. When the chute is not in use for coal, a glass door serves as a window, giving splendid light to the basement.

Locks from the inside and is absolutely burglar proof

It is extra durable, has a heavy steel body—semi-steel door frame and boller plate hopper. It will last as long as the building. Arrange for one when you build, or can be used in place of cellar window.

We make the Majestic in all types for houses, hotels, store and office buildings, apartments, etc. See them at hardware and building material dealers.

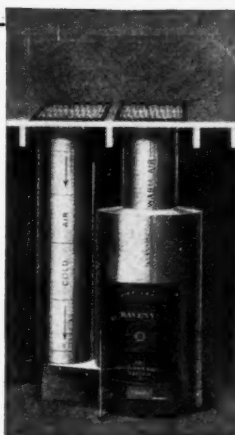
Architects and Builders Write for Catalog of
Majestic Specialties—See Sweet's Catalog

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Manufacturers of Coal Chutes, Garbage Receivers, Milk and Package Receivers. All Metal Basement Windows, Rubbish Burners, Street and Park Refuse Cans, Metal Plant Boxes, Hose Reels, Pipe and Pipeless Warm Air Furnaces, etc.

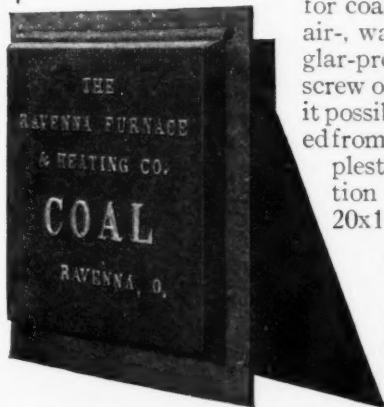
Our Pipeless System of heating is the only practical single, warm air conveyor system, in line with scientific principles. The system provides for advantages as follows: warm air velocity, which saves both fuel and furnace, requires little basement room; lowest cost of installation.

Send for descriptive circular. Also get circulars on our Window Chute



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Three
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Glass or
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The "BEST" Coal Chute

Thousands are now in use, giving general satisfaction. No dirty sliding where the "BEST" Fuel Chute is used.

NEAT, PRACTICAL, MODERATE COST

Locks automatically in two positions—OPEN AND CLOSED. A chain is attached to the catch so that the door can be unlocked from any part of the coal room. Write for illustrated folder and full information.

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To Cut Their Coal Bills $\frac{1}{2}$ to $\frac{2}{3}$

You can guarantee the Williamson New-Feed UNDERFEED to cut your customers' coal bills $\frac{1}{2}$ to $\frac{2}{3}$ —and we back you. Build business by recommending

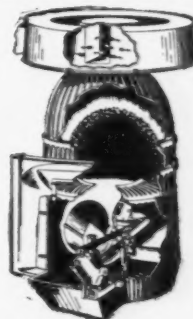


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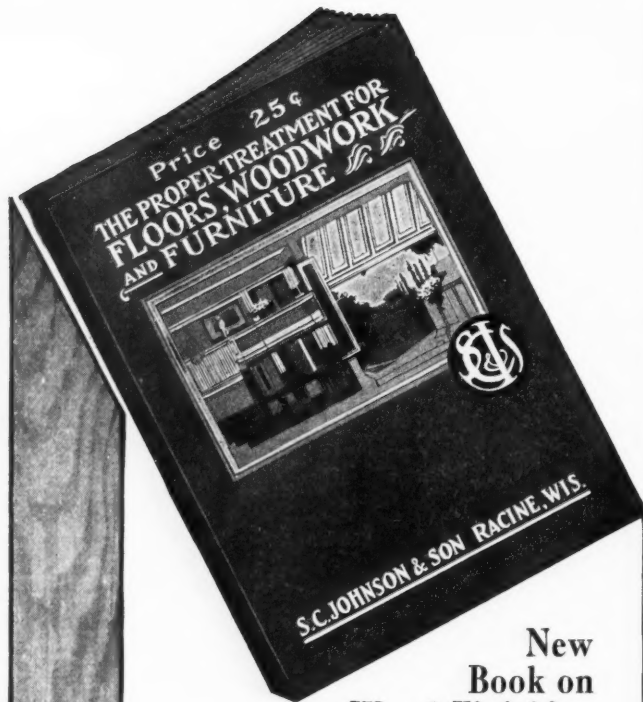
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UNDERFEED Furnace



New Book on Wood Finishing

EVERY architect, contractor and builder is entitled to one of these new books free for the asking. It is a valuable handbook on interior finishing, beautifully illustrated in nine colors.

It tells how to finish inexpensive soft woods as beautifully as hardwoods and gives complete specifications for finishing woodwork and floors with

Johnson's Wood Dye

These dyes are not pore-filling varnish stains but coloring matter that penetrates deeply into the wood without raising the grain.

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Please send me free and postpaid my copy of your new 25c Instruction Book, "The Proper Treatment for Floors, Woodwork and Furniture."

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Get Into the Procession

"There have been more than enough automobiles built since January 1st to supply every participant and every observer of the recent New York preparedness parade—the longest in the history of America," says H. P. Branstetter, of the Kissel Kar.

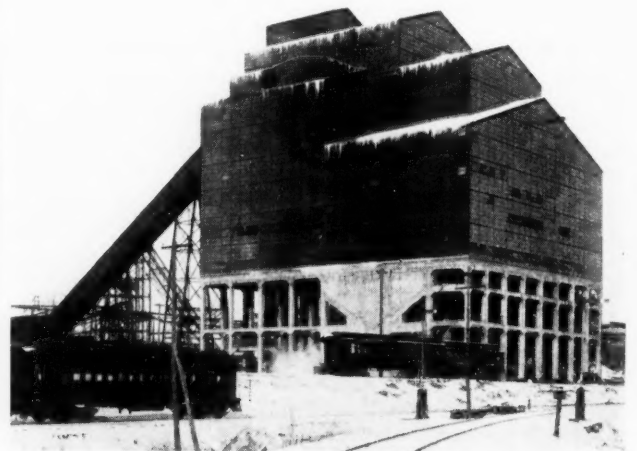
"It needs comparison of this sort to fully drive home the enormity of the present production of cars. You think of 150,000 people walking twenty abreast and occupying thirteen hours to pass a given point, as a wonderful mass. But how about more than three times as many machines? Enough to stagger the imagination, isn't it?"

"And yet there is a ready market for more than the number of cars made. Dealers everywhere are clamoring for them and June promises to smash to smithereens the sales record of any month since the automobile was born. The Kissel factory is well prepared to take care of its share of this June business, its scheduled output being on the basis of continuous night and day work in nearly every department."



Fenestra Sash in Use in Coal Breakers

The picture shown herewith is one of the new Loomis coal breakers of the D. L. & W. Railroad. It is located at Scranton, Pa., and embodies the last word in up-to-dateness in buildings of this type. It is a mammoth among structures of its kind. Its capacity is 7,500 tons per day, which is greater than that of any other. Working 250 days, it can handle 1,875,000 tons of coal in a year. No other breaker has been built with such large ideas in mind, and there is no



This New Scranton, Pa., Coal Breaker is 93.5 per cent Glass; 22,000 Panes Set in Fenestra Steel Sash.

precedent for some of the things done, but there is a large experience behind them.

The first thing that one would notice is that the entire breaker above the pockets is glazed and there is no blind wall. The whole breaker is inclosed with Fenestra steel sash, which holds 22,000 panes of wire glass 13x24 in. in size and 1/4 in. thick. There have been other "daylight breakers," but none so completely opened to light as this. Glass covers 93.5 per cent of the surface. Artificial lighting will be needed only for short periods on some winter days. Increased carefulness is anticipated, as well as higher speed.

The building is of concrete up to the tops of the pockets, and the concrete work is unusually good. Above this it is of steel. There are in the building something over 2,000,000 lbs. of structural steel. Wood is not entirely eliminated, but it is used only for picking floors and chutes. There is almost no possibility of fire, but sprinklers will be installed. The floors are of concrete.

EVANS "ALMETL" APPROVED FIRE DOORS



RIGID—

INDESTRUCTIBLE
NON-WARPING
ALL STEEL
AND ASBESTOS
CONSTRUCTION

EASY TO INSTALL
COST NOTHING
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WE HAVE 150 COMPETENT ERECTING
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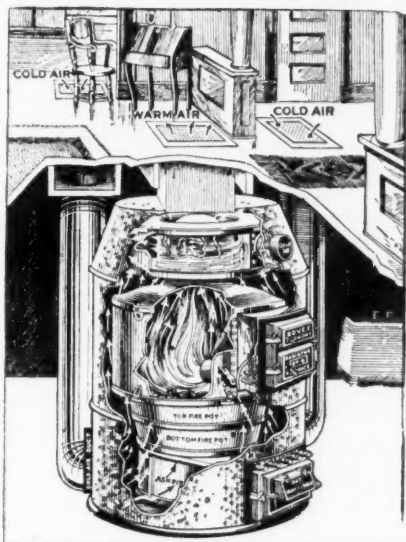
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HEATING
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Every home
can now have
a first-class
high-grade
heating system
in an old house
as well as new.
Heats as much
as three large
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but little more
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We furnish either our UPRIGHT FURNACE for burning hard coal, soft coal or wood; or our HORIZONTAL FURNACE with large doors 16x16 inches for burning 4-foot wood or soft coal.

Either style furnace furnished in any size necessary to heat the house.

UNUSUAL SYSTEM WITH PIPING TO EACH ROOM FURNISHED WHEN DESIRED. Write for our three color catalogue, free.

BOVEE FURNACE WORKS

210 Eighth St.

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What's Keeping Me Back?

You've wondered why you don't get ahead. Why your pay isn't increased. Why you don't get promoted. You've blamed everything and everybody, when the real drawback is *yourself*.

You're standing still because you lack *training*. Because you have not *prepared* yourself to do some one thing better than others. If you really want to get ahead, the way is open to you.

For 25 years the International Correspondence Schools have been helping men to climb into good paying positions. Nearly 5000 reported last year that I. C. S. training had won them advancement. *You* can get I. C. S. training in your spare time in your own home without losing a day or a dollar from your present employment.

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FLEX-A-TILE ROLL SHINGLE (PATENTED)

WE had in mind, when we designed this new Flex-A-Tile Roll Shingle, the growing demand for asphalt shingle roofs that would cost little to lay. How nicely we have accomplished this economy is surprising—this full size, 32-inch wide roll of asphalt shingles takes no more labor to apply than ordinary roll roofing.

It is a splendid shingle roofing, too—satisfying perfectly the requirements of those who heretofore would never roof with commonplace roll roofings.

Of course, the illustration above cannot begin to give a realistic idea of the true beauty of the shingles—nor can it show the distinctive way each single shingle stands out without the aid of paint or any imitation process to produce the genuine appearance of individual asphalt shingles. But, let us send direct to you a sample of this Flex-A-Tile Roll Shingle. Hold it in your hand. Feel its weight. Test it any way you will.

Just Write Today

Say that you are interested in the new Flex-A-Tile Roll Roofing and mention what your business is. We will forward liberal samples, prices and any other information you may wish.

Become an Agent

A number of excellent agency appointments for this new Flex-A-Tile Roll Shingle are still available.

THE HEPPES COMPANY

Dept. F, 1010 Kilbourne Ave., Chicago, Ill.

Flex-A-Tile Diamond Point Slabs
Utility Board No-Tar Asphalt Paint
Other Guaranteed Heppes Products

What One Big Concern Thinks of Topping's Folding Garage Door Hanger

The following letter was recently received by the Safety Door Hanger Company with regard to the results that have been obtained with their garage door hanger. This letter gives a good idea of the opinion held by the writer of the usefulness and value of Topping hangers:

Whitmore, Rauber & Vicinus, Incorporated.
Contractors.

Cut Stone, Granite, Tiles and Interior Marble.
Mason Supplies.

Office, No. 279 South Ave., Rochester, N. Y.
Safety Door Hanger Co., Ashland, Ohio.

Gentlemen:—Please ship us four (4) sets of the Topping Folding Garage Door Hanger, same as you sent to Mr. Lester, for our Mr. Hamilton's Garage.

Any time that you wish testimonials on the good merits of this hanger, the writer will be pleased to furnish you with the same, as he considers it one of the finest hangers on the market.

No doubt you have received inquiries from Mathews & Boucher and Mr. Lester with reference to this hanger thru the courtesy of the writer.

If you are unable to get the four (4) sets, ship one (1) set by express at *once*.

WHITMORE, RAUBER & VICINUS,
By J. M. Hamilton.



"Money on the Floor"

Years ago a man, most likely a carpenter, made an improvement in the boards that went on the floors of buildings. He introduced the tongue and groove idea in floor boards which for years was the accepted form in use. It was a long step in advance of the old-fashioned plan of flooring.

A new idea in flooring is now being brought to the attention of builders and the claim is made for it that it is an improvement over the ordinary tongue and groove. The tongue and groove in this flooring is made in a beveled form which makes a long strong tongue with the underside reinforced so that it will not break when the nails are driven thru it. This new flooring is known as Kuhn patent tongue and groove flooring. The construction is shown in the accompanying illustration.



Section of Kuhn Flooring.

The construction is shown in the accompanying illustration.

The Interior Hardwood Company state the following with regard to Kuhn flooring. It is made from carefully selected hardwood lumber, and 80 per cent comes in lengths of 8 feet or over. No strip is shorter than 4 feet and the 20 per cent average between 4 and 8 feet is well above 6 feet. There is an added profit for the builder in using long-length flooring.

Kuhn flooring is also said to be carefully selected for color. The accuracy of the machine work secures a perfect fit at all joints. All the lumber is very carefully seasoned.

Kuhn patent flooring is made in quarter sawed oak, plain sawed white oak, plain sawed red oak, hard white maple, dark mahogany, black walnut, dark cherry, and dark oak. The makers of this flooring also manufacture a complete line of beautiful parquet floors, borders, and wood carpet—all of Kuhn quality.

This company furnishes a book, which they send free, containing valuable information and suggestions about hardwood floors and their manufacture, laying, finishing, and care. This book is very useful for contractors, builders, and architects and also contains much information of interest to homeowners.

Address the Interior Hardwood Company, 1313 Beecher Street, Indianapolis, Ind., if you wish a copy sent to you.